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UNIVERSITY OF TORONTO

President's Report

FOR THE YEAR ENDING
30TH JUNE, 1935

PRESIDENT'S REPORT

1934-1935

To the Governors of the University of Toronto:

GENTLEMEN:

I beg to submit the following report on the academic work of the University and University College during the twelve months ended June 30th, 1935:

INTRODUCTION

In this report I can touch only the main features of the year's activities and attainments, for the details of which I refer you to the reports of the various Deans and Heads of the Faculties and Departments. It has been a year of hard study, good spirit and fine co-operation. Who could fail to be happy in the amazingly interesting work of a university such as this, with its unity amid variety, its wide range of daily problems, its constant financial and educational challenges? I wish to express my heartfelt thanks for the wise and intelligent support I have invariably received from the Chairman and members of the Board of Governors, the administrative officers, and the members of the teaching staff, and for the confidence and goodwill which graduates and undergraduates have constantly shown me.

ATTENDANCE

The total number of students in attendance was 7711, of whom 4948 were men and 2763 women; 7241 being registered in the colleges and faculties, and 470 in the departments. The number of students proceeding to degrees was 6156 and to diplomas 981. Of the students in attendance 3738 came from Toronto, and 3246 from other parts of the Province of Ontario. Every county is represented. There has been a drop in registration of only 98. That through these days of depression registration has been substantially maintained is fresh evidence that young men and women are intensely determined to have higher education for themselves, and that their parents share this determination no matter what sacrifice has to be made. It is also an expression of confidence in the university's staff and curriculum. Those who are proposing to attend a university in these days of financial stringency wish to obtain full return for their expenditure. Ineffective teaching cannot satisfy nor survive.

Very many of our students seek employment in the summer months in order to earn money towards defraying their university expenses. The tale of their doings is varied and romantic. Visitors from the ancient universities of the Motherland comment on a practice which is so widespread on this continent, and fear that the fine bloom of scholarship is lost thereby. Summer reading-parties under a tutor are made impossible and the continuity of the intellectual life is broken. These criticisms may be true; yet there is much to be said by way of counterbalance, in that strength of character which comes through struggle and that ready adjustment to life which contact with men and things inevitably brings.

Many a tale of heroism would be told, if one could only relate the sacrifice which men and women are making to finish their courses and fit themselves for the further battle of life.

Does the world need them? Does it want them? In recent years there has been a hesitancy in answering these questions. But opportunities are increasing. This far-stretching land, richly dowered with material wealth, cannot permanently

stand still. To its activities and its problems intelligence and science must be applied, and fresh openings will be created. If the aim of education be only to enable a man to make a living, education will sooner, rather than later, be justified of its children; but if the true and higher aim of education is to enable a man to make a life, to build a character, then the enriched personality will always be a precious possession in itself and in the power it creates to live a better life. I believe that our graduates will find a place or make one in the Canada that is to be.

THE STAFF

The total staff of the University and University College numbered 901, of whom 118 were professors, 68 associate professors, 73 assistant professors, 238 lecturers, associates (in medicine and dentistry) and instructors in the College of Education, 1 director, 2 assistant directors, 401 demonstrators, fellows and instructors with sessional appointments.

During the past year death has removed several members and former members of our staff, whose teaching careers added lustre to this University. In the minutes of our various faculties and of the Senate are to be found appropriate and detailed memorials of them. We can best pay tribute to their memory by carrying on to heights of new achievement the work which for so many years they faithfully performed.

N. H. Beemer, M.B., professor extra-mural of mental diseases; Geoffrey Boyd, B.A., M.B., associate professor of oto-laryngology; G. H. Burnham, M.D., F.R.C.S. (Edin.), professor emeritus of ophthalmology; J. F. McCurdy, Ph.D. Princ., LL.D., professor emeritus of oriental languages; D. N. Maclennan, M.D., C.M., assistant professor of ophthalmology; A. D. McKelvey, B.A., M.B., assistant in oto-laryngology; J. J. R. Macleod, M.B., Ch.B. (Aberdeen), D.Sc., LL.D., F.R.S., professor of physiology and associate dean of the faculty of medicine; A. McPhedran, M.B., M.D., LL.D., F.R.S.C., F.R.C.P. (C), professor emeritus of medicine; W. E. Macpherson, B.A., LL.B. Queen's, professor of history of education, and librarian in the Ontario College of Education; N. A. Powell, M.D., C.M., professor emeritus of medical jurisprudence; D. J. G. Wishart, B.A., M.D., C.M., professor emeritus of oto-laryngology.

I give a brief record of the services of each.

Professor N. H. Beemer gave much valuable teaching help as an extra-mural professor of mental diseases. His wide experience as head of one of the largest mental hospitals in the Province enabled him to lecture with fullness of knowledge, while his interest in individual students won for him an immediate response on the part of his classes.

Dr. Geoffrey Boyd, a son of the late Chancellor Sir John Boyd, died on December 22, 1934. He was a graduate of this University and for some years was on the staff in the department of oto-laryngology, from which he retired as associate professor. He was a charter member of the Academy of Medicine. His skill in clinical teaching and his lovable character perpetuated his memory for many generations of students.

Dr. G. Herbert Burnham was one of the members of the medical staff of Trinity College, and like Dr. Powell, came on the staff of the University of Toronto in 1887, after the amalgamation. He was successively clinical lecturer, associate professor, and full professor of ophthalmology and otology. The last post he held from 1903 to 1920. He was a man of high ethical standards which he exemplified and commended to his successive generations of students. He was happily able to be active in his profession till the time of his death in April 1935.

In his 89th year, Professor James Frederick McCurdy, for 28 years head of the department of Semitic language and literature in University College, passed away. As he had resigned his chair in 1913 his name and work were

not familiar to the present generation of undergraduates; but there still remains in the University the tradition of his profound erudition, of his wonderful mastery of languages, and of his application of archaeology and modern literary criticism to the interpretation of the Old Testament. In this field he was among the pioneers on this continent. Many of the Semitic scholars in Canada are his pupils.

Dr. D. N. Maclennan was assistant professor of ophthalmology and an admirable clinical teacher.

Dr. A. D. McKelvey was for a short time on the staff in the department of oto-laryngology. He was an excellent clinician, but because of a disabling accident he was forced to discontinue as a teacher.

At Aberdeen, Scotland, on the 16th of March, 1935, died Professor John James Rickard Macleod, F.R.S., in his 59th year. From 1918 to 1927 he held the chair of physiology in this University. In the latter year, he returned to his *alma mater*, Aberdeen, to be professor of physiology, fulfilling the dream of his youthful ambition. While serving here he was appointed associate dean of the Faculty of Medicine. An experienced investigator in the field of carbohydrate metabolism, he attracted to his laboratory at this University a group of young research workers. Among them was F. G. Banting, who pursued in Toronto his investigation on the pancreas with the assistance of Charles H. Best. These investigations led to the discovery of insulin by Banting and Best. The product was purified with the co-operation of Collip, and made available for the treatment of *diabetes mellitus*. In recognition of this achievement Dr. Banting and Professor Macleod were jointly awarded the Nobel Prize for medicine in 1923. Dr. Banting (now Sir Frederick, and F.R.S.) shared his award with Dr. Best, and Professor Macleod shared his with Dr. Collip (now F.R.S. and professor of biochemistry at McGill University). Professor Macleod's "Physiology and Biochemistry in Modern Medicine" became an international text-book. He was a lucid lecturer and gave stimulus and direction to many research students.

On December 19th, 1934, shortly after he had celebrated his 87th birthday, Dr. Alexander McPhedran passed away. His was a famous name in the history of the development of medical education in this University. A graduate of this University, he soon built up a large general practice, and then a consulting practice, but the teaching of medicine was the main occupation and object of his life. In 1900 he succeeded Dr. J. E. Graham as head of the department of medicine. Till his retirement in 1919 he devoted his experience as a teacher, his tireless energy and his fine organising ability to the development of his department, and left an indelible impress on a veritable host of students. The renown of his thoroughness and strictness as a teacher, and of his skill as a physician extended far beyond the bounds of his native land. He handed on to his successor a great inheritance and a great tradition; and these have been worthily maintained.

Professor Walter Ernest Macpherson, of the Faculty of Education, died on the 10th of January, after a long and painful illness. After his graduation he taught in several secondary schools in the Province, and in 1910 was appointed lecturer in education and chief instructor in history in the University of Toronto Schools. From 1913 to 1920 he was associate professor of education in Queen's University, Kingston, and then returned to Toronto to be professor of the history of education and librarian in the College of Education. He was also editor of "The School", an excellent magazine for teachers. A fine teacher and a fine personality, he has left an impress for good on the secondary school teachers of Ontario.

Dr. Newton Albert Powell, one of the most widely known of the older members of the medical profession, died on the 7th of April, in his 86th year. From 1886 he was on the staff of Trinity Medical College, and after its amalgamation with the University of Toronto became a professor on its staff. He was a nephew of Mr. Hart A. Massey. His career was full of variety and service. As a boy

of 16 he served in the Fenian Raid, and was afterwards an artillery instructor. After he began medical practice in Toronto, he was the first curator of the medical library, which was established at the instigation of Sir William Osler. Out of this library grew the Academy of Medicine, of which Dr. Powell was a founder, past president, and honorary fellow. He was instrumental in securing the erection of the Shields Emergency Wing of the Toronto General Hospital, and in establishing the Muskoka Cottage Sanitarium for tubercular patients. He was a pioneer leader in the battle against tuberculosis. His teaching was marked by wit and energy, and by an effort constantly to relate the theoretical side of medicine to the practical needs of human beings. He was philanthropist as well as physician.

Dr. David James Gibb Wishart died on the 5th of December, 1934. A graduate in Arts of this University and of Medicine of McGill, he spent all the years of his practice in Toronto, where he was continuously a teacher and practitioner in oto-laryngology. From 1886 to 1905 he was on the staff of the Women's Medical College; from 1889 to 1903 on that of Trinity Medical College; and on the federation of Trinity Medical College with the University of Toronto he held an associate-professorship of oto-laryngology from 1903 to 1914, and from 1914 to 1922 was full professor and chief of the department.

The University has suffered a severe loss in the death of Sir Albert Gooderham, K.C.M.G. For many years he has been a member of the Board of Governors and Chairman of the Connaught Laboratories' Committee and the Insulin Committee, as well as Chairman of the Governors of the Toronto Conservatory of Music. His name should be held in grateful remembrance by the whole country as the founder of the Connaught Laboratories. His original gift of $75,000 for this purpose, during the days of the Great War, has grown into a plant, whose assets are over $1,000,000, and whose yearly sales are over $500,000. It is impossible to estimate the value in life, health and happiness of the yearly distribution of the products of these laboratories. The moderate profits are devoted to medical research in the field of public health. With characteristic modesty Colonel Gooderham kept his own name in the background, and called the new foundation after the Royal Governor-General of those days, the Duke of Connaught.

I also chronicle with regret the sudden passing of the architect of Hart House, Mr. Henry Sproatt, one of the foremost Gothic architects of the continent. This University had conferred on him the degree of LL.D. *honoris causa*, and he had been elected a Fellow of the Royal Institute of British Architects. His profession had given him all the honours within its power. In this University Hart House will always be his visible monument. A tablet commemorating his work has been placed near the main entrance to Hart House.

Three members of our staff retired under the age limit after spending the full vigour of their life in the service of the University: C. A. Chant, M.A., Ph.D. (Harvard); W. B. Hendry, B.A., M.B., F.R.C.S. (Canada), F.C.O.G. (England); and Samuel Johnston, M.A., M.D., C.M.

Professor Clarence Augustus Chant's whole academic life has been spent in this University, from which he graduated in 1890. After service as a fellow and lecturer in physics, he was made head of the newly-established department of astro-physics in 1907, as an associate professor. In 1918 he became full professor. His career has been devoted to the teaching of astronomy and to emphasising its value as a cultural subject in a liberal education and as a fine intellectual discipline for the advanced student. For years he urged that the University should have an Observatory, and to make some fresh contribution to the knowledge of astronomy. Professor Chant's dream came true in his own life time, when Mrs. Dunlap presented to the University of Toronto, in memory

of her husband, David A. Dunlap, the splendid observatory with its magnificent telescope, which was formally opened on the 31st May. By a happy coincidence, the day of opening was Professor Chant's seventieth birthday. Dr. Chant remains as professor emeritus of astro-physics and emeritus director of the Observatory as well as its honorary librarian and director of publications.

Dr. William Belfry Hendry retires as professor of obstetrics and gynaecology. From 1907 to 1914 he served as demonstrator and assistant in the department of anatomy, and from 1909 in the department of obstetrics and gynaecology as demonstrator, associate and associate professor, and since 1922 full professor. As one who had been a teacher, he carried into his university work skill in imparting knowledge and the power of stimulating thought. His wide private practice brought him a valuable experience on which he generously drew for the benefit of his students. In the Medical Faculty Council his wise counsel and calm judgment were of great value to its deliberations. He suffered a crushing blow in the death of his brilliant young son, Dr. William John Hendry, who died a martyr to experimental science at Baltimore in 1933. In his memory Dr. and Mrs. W. B. Hendry have established a scholarship to be awarded to the sixth year student who stands highest in the final examinations in obstetrics and gynaecology. Thus will the name of father and son be forever gratefully remembered in this University.

Dr. Samuel Johnston was for many years the chief of the anaesthetic service in the Toronto General Hospital, and the head of the section of anaesthesia in the department of therapeutics in the University Medical Faculty. He has trained generations of students in the latest and best methods of anaesthesia, and leaves a well-organised group to carry on his work.

These members of the staff who have retired deserve well of the University. Their energies have been part of the institution they have so faithfully served. We thank them and wish them well in what we trust will be a long and interesting evening of life.

The following resigned their positions: J. Chapelon, D. ès Sc. (Paris), professor of mathematics; G. E. Jackson, B.A. (Cambridge), professor of political economy; F. C. Green, M.A. (St. Andrew's), Ph.D. (Cologne), D. de l'U. (Paris), professor of French; E. K. Brown, B.A., Dip. d'E.S. (Paris), D. de l'Etat (France), assistant professor of English; Miss C. F. Valentine, M.A., assistant professor of household science.

Dr. Jacques Chapelon served on our mathematical staff from 1924 to 1928 as a visting professor, and from 1929 as a full professor. He was one of the greatest authorities in the world on the subject of mathematical statistics. He yearly revisited Paris, and last year was absent from Toronto on leave without salary. Professor Chapelon felt he could not do justice to his work on both sides of the Atlantic, and finally decided that for the present he would resign his chair in Toronto. He is now Repetiteur at L'Ecole Polytechnique in Paris and professor of mathematics at the University of Lille.

Professor Gilbert Jackson's acceptance of a post in the Bank of England deprived us of the services of one of our most valued and influential teachers. A graduate of Cambridge (St. John's College) he came to us in 1911 as a lecturer in economics. In 1927 he was made a full professor.

In 1915 he was made a member of and secretary to the Ontario Commission on Unemployment, and in 1922-3 chairman of the Employment Service Council of Ontario.

During the War he served as a private in the Royal West Kent Regiment, and won a commission in the Royal North Lancashire Regiment. Professor Jackson was made supervisor of the students in the department of Commerce and Finance, and devoted himself to helping, guiding, and finding positions for his individual students. He had a valuable connection with the general business activities of the Dominion through his work as economist of the Bank of Nova

Scotia. Professor Jackson is now one of the "advisers" of the Bank of England in regard to the Overseas Dominions. Both in the University and throughout Canada he had become a recognised authority on banking and on economic problems, especially as these are related to the practical conduct of business. We miss him keenly, and hope that he will still keep in touch with our country and our University.

Frederick Charles Green, a graduate of St. Andrew's University, Scotland, after serving in the departments of French in the Universities of Manitoba and Rochester, came to us as a full professor in 1926. He was an authority on French literature in the eighteenth century and last year published a book on the relation between French and English thought in that period. He was chosen in the autumn of 1934 to be head of the department of French in the University of Cambridge, England, and to our great regret left us at the end of the spring term of 1935.

Edward Killoran Brown is one of our own graduates, who took further courses in Paris, winning finally the high rank of "Doctor of the State" on the basis of books written both in French and in English. He has been on our staff since 1929 as lecturer and assistant professor. He has left us to become the head of the department of English in the University of Manitoba. He was one of the editors of the "University Quarterly". He was an accurate scholar, a stimulating teacher, and a constant contributor to literary magazines.

Miss Charlotte Francis Valentine began her teaching work in the Faculty of Household Science as research worker in 1923. Then in due course she became lecturer in 1925, and assistant professor in 1931. She has been an excellent instructor and a wise leader in research. She has resigned to be married.

When members of our staff are called to posts in other institutions, we know that a form of compliment is paid to us and to our choice of professors; but this is a tribute whose dangerous consequences we must try to avoid. We must seek to replace those leaving with others who if possible are their equals in scholarship and teaching power. Otherwise there would be a lowering in our academic standards, for such standards are set by the teaching staff.

Leave of absence was granted to J. Chapelon, D. ès Sc. (Paris), professor of mathematics for the whole year.

The following new appointments and promotions were made during the year:

In the Faculty of Arts:—Appointments: F. B. Allan, M.A., Ph.D., Dean of the Faculty of Arts; S. Beatty, M.A., Ph.D., head of the department of mathematics; E. M. Walker, B.A., M.B., head of the department of biology; Rt. Rev. W. C. White, associate professor of archaeology (Chinese); E. J. G. Alford, M.A. (Cantab.), professor of fine art; W. J. McCurdy, B.A. (Dal.), M.A., Ph.D. (Harv.), assistant professor of philosophy; F. S. Hogg, B.A., A.M., Ph.D. (Harv.), lecturer in astronomy; P. M. Millman, B.A., A.M., Ph.D. (Harv.), lecturer in astronomy; D. R. Derry, B.A. (Cantab.), M.A., Ph.D., lecturer in geology; Miss M. Fritz, M.A., Ph.D., lecturer in geology; V. F. Coe, Ph.B. (Chicago), lecturer in political economy; C. A. Ashley, B. Comm. (Birm.), supervisor of studies in commerce and finance.

Promotions:—I. R. Pounder, M.A., Ph.D. (Chicago), from an associate-professorship to a professorship in mathematics; L. Irving, A.B. (Bowdoin), A.M. (Harv.), Ph.D. (Stanford), transferred from physiology from an associate-professorship to a professorship in experimental biology; F. H. Anderson, B.A. (Dal.), M.A., Ph.D., from an associate-professorship to a professorship in philosophy; E. Goggio, B.A. (Harv.), M.A. (Tor.), Ph.D. (Harv.), from an associate-professorship to a professorship in Italian and Spanish; A. R. Gordon, M.A., Ph.D., from an assistant-professorship to an associate-professorship in chemistry; W. J. McAndrew, M.A., from an assistant-professorship to an associate-professorship in French; G. deB. Robinson, B.A., Ph.D. (Cantab.),

from a lectureship to an assistant-professorship in mathematics; T. B.A. (B.C.), M.S. (Wis.), Ph.D. from a lectureship to an assistant in botany; D. J. McDougall, B.A., M.A. (Oxon), from a lectureship tant-professorship in history; E. W. McInnis, B.A., M.A. (Oxon), fr ship to an assistant-professorship in history; Miss I. M. Biss, M.A. (C (Cantab.) from a lectureship to an assistant-professorship in political J. F. Parkinson, B. Comm. (London), from a lectureship to an assistant-pro ship in political economy; J. Finkelman, M.A., LL.B., from a lectureship to assistant-professorship in administrative and industrial law; J. D. Ketchum, M.A., from a lectureship to an assistant-professorship in psychology.

In the Faculty of Medicine:—Appointments: R. F. Farquharson, M.B., F.R.C.P. (C.), assistant professor of medicine and clinical medicine and therapeutics, and head of the department of therapeutics; A. C. Singleton, M.B., associate in radiology; W. J. Gardiner, M.B., associate in therapeutics, subdepartment of physical therapy.

Promotions:—W. L. Robinson, B.A. (McM.), M.B., F.R.C.P. (C.), from an associate-professorship to a professorship in pathology; W. F. McPhedran, B.A., M.B., F.R.C.P. (C.), from an associateship to an assistant-professorship in medicine; S. Johnston, M.A., M.D., C.M., from a lectureship to an associateship in therapeutics.

In the Faculty of Applied Science:—Appointments: H. J. Burden, B.A.Sc., M.F.A. (Princ.) assistant professor of architecture; G. H. Hally, B.A.Sc., lecturer in mechanical engineering; R. C. Wiren, B.A.Sc., lecturer in mechanical engineering; A. Wardell, B.A.Sc. lecturer in engineering drawing.

Promotions:—H. H. Madill, B.A.Sc., from an associate-professorship to a professorship in architecture; E. R. Arthur, M.A., B. Arch. (Liv.) from an associate-professorship to a professorship in architecture; W. B. Dunbar, B.A.Sc., from a lectureship to an assistant-professorship in engineering drawing.

In the Faculty of Household Science:—Appointments: Miss H. R. Coatsworth, M.A., lecturer in household science.

In the Faculty of Forestry:—Appointment: G. C. Cosens, B.Sc.F., M.A., associate-professor of forestry.

Promotion: R. C. Hosie, B.Sc.F., M.A., from a lectureship to an assistant-professorship in forestry.

In the Ontario College of Education:—Appointment: A. C. Lewis, M.A., B.Paed. headmaster of the University of Toronto Schools.

Promotion: J. G. Althouse, M.A., D.Paed. from the headmastership of the University of Toronto Schools to the deanship of the Ontario College of Education.

In the Faculty of Dentistry:—Promotion: C. A. Corrigan, D.D.S., from an associate-professorship to a professorship in orthodontia.

In the School of Hygiene:—Appointment: D. L. MacLean, M.D., B.Sc. (Med.) lecturer in physiological hygiene.

Promotion: N. E. McKinnon, M.B., from an assistant-professorship to an associate-professorship in hygiene and epidemiology.

In the School of Nursing:—Appointment: Miss D. M. Percy, lecturer.

Several of our teachers have rendered public service in addition to their university work: Professor H. R. Kemp assisted the Tariff Board in the capacity of investigator, statistician and economic adviser on the report on woollen and worsted fabrics and worsted weaving yarn.

Dr. Linell has been asked by the Department of Health to be their consulting neuropathologist and to assume charge of the work done in the Division of Neuropathology in the Ontario Hospitals. Such a working partnership will grant advantages to the student of neuropathology, and at the same time be

Scotia. Profes ling those responsible for the care and treatment of the patients in regard to t Hospitals.
Canada he h artment of physics has made several important contacts with the problems, es epartment of Health under the Minister, the Hon. Dr. Faulkner. We miss hi sement of the physics building has been erected apparatus for the and our l on of radons or radium "seeds", emanations from radium in solution. It is also a plant for testing their strength. This has now become a routine after ocedure. In collaboration with Dr. Cunningham of the Ontario Department of Health the physics department is carrying out a spectroscopic research for which the Minister of Health has paid $1000 as a grant to the University. Dr. May Annetts and Mr. Hamilton Sims in co-operation with Mr. J. D. Leitch of the Health Department, have been working on the problem of dust prevention in industry.

Professor R. B. Thomson of the department of botany continues to urge upon the City and University the establishment of a Botanical Garden. Undoubtedly such a garden would add to the beauty of the city and to the opportunities for open-air scientific research. I understand that private generosity is ready to co-operate with public action in providing it.

In February last I was invited to be one of the speakers at the annual commemoration of Abraham Lincoln's birthday, held in Springfield, Illinois. The other speakers were the Italian Ambassador to the United States, Augusto Rosso, and the Japanese Ambassador, Hivosi Saito.

Honours were conferred upon members of the staff:

A knighthood upon Dr. Ernest MacMillan, and upon the late Professor Emeritus, J. C. McLennan; C.B.E. upon Professor W. Lash Miller; Professor H. H. Madill was elected a Fellow of the Royal Architectural Institute of Canada; Sir Frederick Banting was elected a Fellow of the Royal Society of England, and awarded the gold medal of the Society of Apothecaries of London, England; Professor W. E. Gallie was appointed Shattuck Lecturer for 1935 by the Massachusetts Medical Society; Dean J. G. FitzGerald was invited to visit the Virginia State Department of Health as a guest of the Rockefeller Foundation; The McCharles Prize for invention and application of devices for improving the control and quality of electrical power service in large systems was awarded to Professor Harold W. Price; Professor J. J. Meek was elected a director of the American Oriental Society and a member of its executive committee; Dr. Jabez H. Elliott was elected President of the Toronto Association of Occupational Therapy; the honorary degree of LL.D. was conferred upon the President by the Universities of Alberta, McMaster and Brown (Providence R.I.); the President was made a Fellow of the Royal Society of Canada.

The chief asset of the University is this group of scholars who teach the students and stimulate and guide research. The educational background and personal experience of such a body represent years of preparation, a great store of present intellectual power and "an incalculable potentiality of service". The Chancellor of New York University wisely maintains that the chief problem of administration in a university is to apply this vast fund of talent most efficiently to the work in hand. This can be done mainly in two directions:

(*a*) by not overwhelming the staff with too crowded classes and too excessive a number of lectures—whereby the time needed for preparation research and publication is unduly curtailed; and

(*b*) by seeking to maintain salaries at the level of those which prevail in comparable universities.

It is probably only in this way that a university can retain the best members of its staff and add to its ranks persons well equipped to fill vacancies.

Our staff has co-operated most loyally in enduring and in making curtailments in expenditure necessitated by a lessened university income, but I hope

that in the not distant future it may be possible to restore salaries to their normal level.

We are proud of our staff. Its members are loyal to the institution, and, judged by various objective criteria, thoroughly competent. I would draw attention to the long list of publications by members of the staff, as an indication of the quantity and quality of research work that is being carried on in all departments. Buildings and equipment are excellent, but of more vital importance than either is living teacher. A visitor from the Motherland once said to me as he viewed our stately buildings: "These are educational palaces. Do intellectual giants live in them?" That is the acid test of university efficiency.

One of the essential parts of the teaching function to-day is the advisory relation that exists between the faculty and the student body. The giving of personal advice, the wise guiding of the individual in his work, is now considered a regular part of an instructor's duty. Such advice is gladly given both at the beginning of the term and throughout it.

When the staff is large the difficulties of mutual acquaintance increases. And yet it is of real value to the University that all its teachers should realise their membership in one organisation. In order to provide an opportunity for our whole university family to meet one another, my wife and I have again given a Reception to all members of the staff and their wives, in the stately halls of the Royal Ontario Museum. About 1200 attended, and the purpose of the gathering seemed to be reasonably achieved.

E. J. King, M.A. (McMaster), Ph.D. (Toronto) has been appointed reader in pathological chemistry in the British Postgraduate Medical School at Hammersmith. He studied under Professor F. B. Allan for two years in chemistry, subsequently spending four years under Professors Banting and Harding. He also took work at the Lister Institute in London and at the Kaiser Wilhelm Institute in Munich. This appointment is a notable one as the new postgraduate medical school is staffed by outstanding specialists in every department of medical science.

We are glad to welcome back to our staff Dr. Andrew Hunter, who succeeds the late Professor Harding as professor of pathological chemistry. A graduate of Edinburgh University in arts, science and medicine, he continued his studies at Berlin and Heidelberg. After serving as an assistant in physiology in the Universities of Edinburgh and Leeds, he came to Cornell University in 1908, to be assistant professor of biochemistry. He came on to Toronto in 1915 and held in succession the chair of pathological chemistry and biochemistry till 1928. During the War he was a Captain in the C.A.M.C. He was called to Glasgow University to be Gardiner Professor of physiological chemistry, and has held this historic chair with great distinction for the past six years. His return to our University will bring to our medical staff the prestige of a great scientist, the ripe experience of a wise teacher, and the stimulus of an inspiring research worker. He is a member both of the Medical Faculty and of the Connaught Laboratories research staff.

FACULTY OF ARTS

I would draw attention to the residential accommodation provided for undergraduates in the three university residences for men, the University College residence on St. George Street, and Whitney Hall for the women of University College. Each residence is in charge of a resident member of the university staff. The amenities provided in Whitney Hall are probably not surpassed in any Canadian University.

The best of relations obtain between the senior years and the freshmen. What are called "Soph-Frosh" banquets are held in the Great Hall of Hart House and provide a welcome rather than a terror to the students of the first year.

The course in meteorology carried on by co-operation between the university staff in physics and the staff in the Meteorological Observatory continues to provide skilled meteorologists for government service. If a regular trans-Atlantic air service becomes a reality there will be an increasing demand for well-trained scientists in this department.

A handsome silver service was presented to Professor Leslie C. Coleman by the Tea Planters Association of Mysore, India, as a token of appreciation of his signal services rendered to them and to the whole cause of agriculture in India. The formal presentation was made in the Senate Chamber after a meeting of the Senate. Professor Coleman now retired from the Indian Civil Service is on the staff as a research associate in botany.

Principal Wallace of University College visited Greece (where his son is working under the American School at Athens), Asia Minor, Palestine and Egypt, and returned to his duties much refreshed and stimulated by this contact with the background of classical and Semitic studies.

The University College veterans of the North West Rebellion of 1885 held a reunion in the Senior Common Room and under Professor Needler's chairmanship "fought their battles o'er again".

A portrait of Sir John C. McLennan, K.B.E., professor emeritus of physics, by the widely known academician, Augustus John, was presented by his friends, and in turn was by him presented to the University. It is hanging in the Library of the McLennan Laboratory.

When Professor Laurence Irving was transferred from the department of physiology to be professor of experimental biology, accommodation and equipment had to be provided for him in the biological building. From the Hoskin bequest the money necessary for these improvements was granted by the Board of Governors. The new laboratories are highly satisfactory and have won the commendation of distinguished visitors from outside the University. The establishment of a chair of experimental biology in Toronto is regarded by both the physiologists and biologists of the continent as an important development in the academic progress of the biological sciences.

The Commerce Club, made up of all students in the department of commerce, held its annual banquet, at which the speaker was Mr. W. H. Moore, M.P.

Professor Ashley is carrying on the work of supervision and employment, formerly carried on by Professor G. E. Jackson (now of England). Professor Bladen has been appointed supervisor of the students in economics and political science.

The training given in this department of commerce meets the demand that the student should fit himself to play his part in the world which modern science and industry have created. A broad basis of general education precedes the discipline in the special fields that are linked with the world of business. The art of living and the art of making a living may be complementary and not contradictory.

LATIN

After two years' discussion on the question of compulsory Latin for matriculation into courses leading to the degree of B.A. the Council of the Faculty of Arts decided in favour of retaining Latin by a vote of 60 to 11. Latin is not required for entrance to the Faculties of Applied Science and Engineering and Forestry, nor to the course leading to the degree of Bachelor of Commerce.

FINE ART

This year the first incumbent of the chair, which has been generously established by the Carnegie Corporation, Professor Alford, has given several courses of public lectures in the Museum Theatre on the history and inter-

pretation of painting and sculpture. He has also lectured in the Ontario College of Art, and in Hart House. He has aroused a growing and intelligent interest in his subject. I anticipate that next year, when a regular curriculum is laid down in the Calendar as one of the optional subjects in the pass course, there will be a large enrolment.

Mr. J. W. L. Forster, the well-known portrait painter, has promised a generous donation towards the purchase of an art library for these courses. A wider service may be rendered by this new department in helping to train those who still teach art in the schools of the Province. Beauty has its place in education and in life along with the other ultimates of Plato, truth and goodness. The broad aim of art is to represent the reality of things under the form of beauty.

A department of fine art is not primarily to teach students to draw or paint or carve either for recreation or for gain, but rather to develop an appreciative and critical eye and mind for the material environment in which we live. Every age expresses in this environment its needs, its ideals, its spiritual and intellectual beliefs and expresses these in art (this shape and character of the material environment) as much as in literature. Both the art and literature of an age are revealing to the historian. The department of fine art deals not merely with the history and interpretation of painting and sculpture ("the fine arts" in the more limited sense) but co-operates with the departments of architecture, archaeology, anthropology and philosophy, and with the Ontario College of Art, in a series of courses which are designed to be an introduction to the history of art and the principles of criticism and which, in Professor Alford's words "will enable any student in the faculty of arts to become acquainted with some branch of visual aesthetic as part of a liberal education".

This department in the University of Toronto will follow the sound tradition of European and American Universities in keeping teaching distinct from propaganda in the realm of art. Its first aim is to familiarise and to expound, not to dogmatise. It will not be the partisan or prophet of any particular school, but will bring before students the products of successive ages for their understanding and judgment.

THE NEW CHAIR OF GEOGRAPHY

I am glad to report that a great step forward in the University has been taken by the establishment of a chair of geography. This has been made possible by the cordial co-operation of the Provincial Department of Education with the Governors in the matter of stipend. We had to choose as the first professor either a younger scholar with his reputation still unmade, or some one whose scientific work was known throughout the learned world and whose coming would bring prestige to the University. We felt that in establishing so important a chair—the first of its kind in a Canadian University—it would be wiser to choose for its first incumbent a tried scholar of maturity and accomplishment. Our first professor will be Dr. Griffith Taylor, of the department of geography in the University of Chicago (one of the chief research institutions in America). He is an Englishman by birth and an Australian by early training. He held the first chair of geography in Australia, in the University of Sydney, and so organised this department that it became famous throughout the Empire. He accompanied Captain Scott on his last expedition to the Antarctic regions, as senior geologist. He combines the basic knowledge of geology with wide travel and economic appreciation. Geography is broadly concerned with the description, localisation and explanation of the facts which relate man to his material environment. It is the story of the background of man's history. It is a liaison or connecting subject which links various sciences together. In a sense it connects the four "environmental" sciences of botany, physics, geology and astronomy with the four "human" sciences of history, economics, sociology, and anthropology. Dr. Taylor will give general courses next year in economic geography and will prepare the way for a regular honour course thereafter.

FACULTY OF MEDICINE

The Dean of the Faculty, Dr. J. G. FitzGerald, has been reappointed for another term of three years.

The visit of Sir Henry Dale in October gave a fresh impetus to all research workers. It was a stimulus to meet in the flesh one who seems to embody in the Motherland the very spirit of medical investigation.

The Academy of Medicine continues to co-operate with the Medical Faculty of the University in providing adequate library facilities and in avoiding unnecessary duplication. Only by such common action can a worthy medical library be built up.

A branch of the Connaught Laboratories has been established in Vancouver, B.C. This will provide a convenient distributing point for the products of the laboratories, but it will also provide a local centre for research. It is placed in charge of Dr. Dolman, who still remains as a part-time member of our staff. He also aids the Provincial Department of Health in B.C. and holds the chair of bacteriology in the Medical Faculty of the University of British Columbia. This expansion of the Connaught Laboratories is in full accord with the spirit of its founder and with the broad views of the Rockefeller Foundation to whose munificence we owe the Hygiene Building and endowment in this University. Such gifts are really trusts to be administered for the welfare of the whole Dominion.

FACULTY OF APPLIED SCIENCE

The new course in engineering physics is in operation and the details of the curriculum in the final years are now being considered. A solid foundation of physics, mathematics and chemistry is of the greatest value in every department of engineering.

Additional accommodation will probably be needed for certain departments. It would be in accordance with the wishes of the late Miss Marie Wallberg if a portion of her bequest were applied for this purpose.

A portrait of Professor emeritus C. H. C. Wright, the head of the School of Architecture for many years, was presented to him at a dinner, and was by him handed over to the University. It hangs in the corridor outside his old office and recalls his years of faithful and efficient service.

One interesting feature of the work of the School of Architecture is the annual exhibit of water-colour sketches made at the summer camp, at Gull Lake, by members of the School. Many of these sketches reveal remarkable promise.

At the annual dinner of the Engineering Society the address of the evening was given by Honourable Vincent Massey, on the part which the engineer plays in the development of his country.

One of the most gratifying events of the year was the award of the McCharles prize to Professor H. W. Price of our department of electrical engineering. This prize carries with it not only high honour, but a cash value of $1000. The first award was made in 1910, a second during the war, one in 1924, one in 1933. The present award is the fifth.

This prize was established by a bequest to the University of Toronto by the late Aeneas McCharles, and is awarded for distinction in scientific research, discovery, or invention of processes, of benefit to Canada and applicable on a practical scale. It is available to Canadians only. The prize will not be awarded for any discovery or invention unless it shall have been proved to the satisfaction of the awarding body to possess the special practical merit indicated by the terms and spirit of the bequest. This is the first time that the award has been given for achievement in a field other than metallurgical, and the first time it has been awarded to a member of the staff of the University of Toronto.

This award to Professor Price was for accomplishments in the creation and development of automatic regulators of rotative speed and alternating current

frequency. Four regulators were created in principle, and developed with the support and approval of the School of Engineering Research of the Faculty of Applied Science and Engineering in this University. All are in routine service. They were inter-related in objective and period of development. The investigation had one objective, the creation of devices for automatically and very precisely regulating the rotative speed of machines. This included the large generators serving electrical transmission systems for the purpose of holding constant the frequency under actual operating conditions.

In the development and design of all four regulators Professor Price wishes to acknowledge the loyal and competent co-operation of C. K. Duff, research assistant in this work.

THE SCHOOL OF GRADUATE STUDIES

As the Dean's report shows, the students in this faculty are drawn both from this Province and from all parts of the Dominion. The astonishing growth of this School places upon the University a heavy responsibility for teaching and equipment. Graduate instruction cannot be regularly carried on in every University in Canada because financial resources are limited. This University may fairly be called on to make its contribution in this field. The productivity of the staff and of research students is one important test of a university's rank in the world of scholarship.

We sorely need more fellowships of the annual value of $500 to enable advanced students to attend this University from other parts of Canada. Investments of this kind will bring in a return that may be of incalculable value to our country and the world.

Professor G. S. Brett was reappointed Dean of this School for another term of three years.

UNIVERSITY EXTENSION

As will be seen from the report of the Director of University Extension, Mr. W. J. Dunlop, this department makes steady progress and reaches an ever widening constituency. Three things are kept in mind in the organisation and conduct of extension classes: (*a*) No class is provided unless there is a demand for it and a sufficient number of students to make its financing possible out of the fees. The only exceptions to this rule are the Workers' Educational classes and the Farmers' classes for which special legislative provision is made. (*b*) The subjects of study are such as are relevant to the general work and ideas of a university. (*c*) The standard of the teaching is maintained at the university level, and most of the instruction is given by members of the university staff.

The new regulation of the Department of Education which requires the first year's work in a university before an interim first class certificate is made permanent, has largely increased the number registered in the Teachers Course. The probabilities are that the sum total of those attending lectures during the autumn and spring terms and the summer term will reach a thousand. No group of students is keener and makes better use of their time than do these more mature students in the Teachers Course. By these courses the standard of individual scholarship in the teaching ranks of our elementary schools will be decidedly raised and a resultant benefit will accrue to the pupils.

Wide as is the variety of evening extension courses the "cultural subjects" and economics are still the favourites. The new course in English diction under the leadership of Mr. J. Campbell McInnis, has been crowded. Perhaps no course is more needed. No one can be deemed really "educated" who cannot use his mother tongue with correctness and grace; and the tone and pronunciation of many may be vastly improved. I look for a great growth in the attendance at this course and for fresh emphasis throughout all our teaching departments on the grammatical, idiomatic and melodious use of our English speech.

The development of Adult Education proceeds apace. Its beginnings are within the memory of people who are still in vigorous service. To-day the idea of education for adults outside institutions of higher learning has firmly possessed the minds of the people. Public libraries are making a valuable contribution to this movement; but an organised committee representing the various institutions which are engaged in this work is now giving leadership and definite form to the whole enterprise. The universities must in all this effort bear a heavy share of responsibility and service, lest the shoddy and over-pretentious take the place of the worthy and solid.

We rightly in these days of increased mechanisation recognise the importance of education for the profitable and safe use of the increased leisure that will come to many. The satisfaction of intellectual desires for their own sake will always be one of the functions of education for leisure time; leisure well used also increases efficiency in working hours. But, as has been well pointed out by an American College President, "to-day the need of a knowledge of the contemporary world as a basis for sound and intelligent judgments has become so great, appeals to prejudice, passion and ignorance, are so varied and insistent, that continued education for adults assumes a civic and social significance which must make us all scrutinise its undertakings with keen attention". I hope that this University will continue to adopt a generous policy in furthering all reasonable schemes of Adult Education.

THE LIBRARY

The library is the great laboratory of the humanities. Both undergraduate and postgraduate students depend upon its stores. The years of financial restriction have naturally curtailed its operations. The amount voted for the library is spent for three chief purposes: the service in the library for the delivery of books to students; the subscriptions to magazines and learned journals and the binding of these; and the purchase and replacement of books. More space and more books are our constant need.

The law library has during the year received very extensive additions by gifts of books from the library of the late Hon. Wallace Nesbitt. The undergraduate library for University College has again received a gift of $5000 from the Carnegie Corporation.

The number of readers in the library shows an increase of seven per cent over last year. Each year has marked an increase. The opening of the central library in the evening has given greatly enhanced opportunities to students.

In several universities in the United States, which I have lately visited, in addition to the regular university library, there are what are called "browsing" libraries, consisting of books on open shelves, accessible to all students, of varied literature and not to be taken away. This institution is met in our University by the Kylie Library in Hart House and by the library in Whitney Hall, established by the University College Alumnae.

HEALTH SERVICE

The connection between the physical fitness of students and their success in academic work is so close that a well-equipped health-service must be regarded as an essential function of every university.

Dr. Porter's statement shows that there have been 1912 medical examinations of men during the past year. Of these 95 per cent were found fit for physical training; 3 per cent had some disability which required corrective exercises,and only two per cent were unfit for physical training.

The average age of first year students is 19 years; their average height 5 feet 8¾ inches and their average weight 142½ lbs—a substantial increase over the figures of ten years ago. As a result of the training and exercise prescribed,

there is in most cases an improvement in the physical condition of second year students. No cases of venereal disease have been found.

Dr. Edith Gordon reports 480 examinations of women students, and about 2000 consultations during the year.

These physical examinations are of value in detecting and remedying early weaknesses before they develop into serious conditions.

The need for larger and better accommodation for the athletic activities and physical-training requirements of the women becomes more obvious every year. I hope that the day is not far distant when it will be possible for the Board to erect a gymnasium and social centre for the women students. The health of the women at the University, the facilities for giving that physical education which teachers in our secondary schools require, and the general athletic, social and recreational interests of women undergraduates, combine to call for careful consideration on the part of the university authorities.

STUDENT ACTIVITIES

The varied activities of students are shown in detail in the Reports of the Warden of Hart House and the Secretary of the Athletic Directorate. The changes made in the regulations of the dining hall have led to an increase in the number of students attending.

In regard to student organisations for manifold purposes, the Caput has adopted the practice of merely noting their existence and the names of their officers, and of notifying these officers that university buildings can be used for meetings of the club or society only after permission duly given by the authorities, and that if any outside speakers are invited they must be approved or allowed by the Caput.

I wish to thank the Students' Administrative Council and its secretaries for the help they have given me throughout the year.

ROYAL ONTARIO MUSEUM

Professor J. R. Dymond was appointed Director of the Zoological Museum in succession to the late Professor Bensley. By action of the Trustees, it is not necessary that the head of the department in the University should be appointed the director of the corresponding museum.

In order to promote still further the work of education which the Museum may do for the community an Educational Committee was appointed by the Trustees, consisting of the President of the University, (Chairman) the Chairman of the Trustees, and representative directors from the sides of archaeology and natural history.

Bishop White gave his inaugural lecture as associate professor of archaeology (Chinese) and keeper of the Eastern Asiatic Collection, on the subject of "Chinese Culture three thousand years ago".

The Mu Library, consisting of 45,000 volumes of Chinese books has now arrived, and is at present stored in the Museum. The provision of suitable accommodation for it depends to some extent on financial factors, which are not yet determined. This large and well-balanced library, in conjunction with the unique collection of Chinese Art in the Museum, will make Toronto one of the most important centres of Chinese studies in America.

ALUMNI FEDERATION

Mr. K. B. Conn for some years the Secretary of the Federation has resigned to undertake other work. Our thanks are given for his past services. There is a great field of opportunity before the federated Alumni. The loyalty of graduates to their *Alma Mater* is real and needs only to be organised and directed. This University depends for its continued efficiency on the goodwill of the people of this Province. The Alumni can do a vital service to the University by main-

taining their interest in its activities and progress and by creating a public opinion favourable to higher education. Local alumni associations might also provide annual scholarships for students from their own neighborhood. The graduates have good reason to be proud of their University, and the University has equal reason to be proud of its graduates.

UNIVERSITY PRESS

This year the University Book Room has come into the possession of the University Press. There are now three general departments of activity: Printing, Publication and Book-selling. The Publications Committee, appointed by the Board of Governors, has effected a clearer sub-division of work and responsibility in the office, and has had the safe-accommodation enlarged. A substantial profit is made in the Printing and Book departments, but a considerable portion of this profit must be spent on the publications. Such publications, while of great value to the world of learning and research, have not always a wide sale and must be subsidised to some extent. To the *University Quarterly* (now edited by Professor A. S. P. Woodhouse) and *The Canadian Historical Review* (edited by Professor George Brown) have been added *The Canadian Journal of Economics and Political Science* (of which the managing editor is Professor V. W. Bladen) and *The University of Toronto Law Journal* (edited by Professor W. P. M. Kennedy and published annually in February). The two latter journals bid fair to be self-sustaining in the near future, while the two former are making excellent progress.

When the first number of the *Law Journal* was issued, Professor A. L. Goodhart, who is professor of jurisprudence in the University of Oxford and editor of the English *Law Quarterly Review* cabled to the editor in Toronto: "Heartiest congratulations on the *University of Toronto Law Journal.* It is a most notable achievement and an outstanding contribution to Law. It marks an important step in legal development and scholarship."

A revised edition of Professor W. T. Jackman's *Economic Principles of Transportation* was published in May and has already had a wide sale. He is regarded as one of the chief world authorities in this department.

I hope that our graduates will still more largely support these scholarly magazines by their subscriptions.

EXAMINATIONS

There is much discussion to-day on the value of examinations. Too many examinations are certainly to be avoided, and unfair, unbalanced and tricky examination papers must be condemned. But some examinations seem necessary, and have a real value, as an old German scholar said, both to stimulate the student and to moderate his self-conceit. Students are now being admitted to the University on recommendation from the Secondary Schools. Every effort will be made to keep these recommendations accurate and valid. In the University itself, especially in the science courses, laboratory work throughout the year can be wisely taken as equivalent to a written test. A special committee has been and still is considering to what degree the number of papers may be reduced, and to what extent the "comprehensive examination" at the end of a course may take the place of examination on the various portions of it. It is urged that such an examination makes it necessary to retain a general knowledge of the subject, instead of regarding a passing work as a permission to forget all that has gone before. A comprehension of the subject as a whole may be a better guarantee of knowledge than the passing of successive examinations in parts of it.

VISITING LECTURERS

During the year the following special lectures were delivered:

On the Alexander Foundation a course of four lectures by Professor E. E. Stoll of the University of Minnesota on "Shakespeare's Lovers"; four lectures by

Professor S. S. Kistler of the department of chemistry, University of Illinois, on "Colloids"; a lecture by Dr. M. L. Fernald of the Gray Herbarium, Harvard University, on "Some Problems of the Taxonomist"; five lectures by Professor E. Noether, department of mathematics, Bryn Mawr University, on "Modern Methods in Algebra and Theory of Numbers"; a lecture by Dr. Harold Rugg, Teachers College, Columbia University, on "Education in a Changing Social Order"; a lecture by Sir Percy Sykes, K.C.I.E., C.B., C.M.G., explorer and author, on "The Influence of Persia in Europe"; a lecture by Dr. W. A. Riddell, official Canadian representative to League of Nations, Geneva, on "The Present European Situation"; a lecture by Principal H. J. W. Hetherington, University of Liverpool, on "Unemployment in England"; a lecture by Monsieur Henri Bordeaux, member of the French Academy, on "La Famille en France"; a lecture by Sir Henry Dale, Director, National Institute for Medical Research, Hampstead, England, on "Humoral Transmission of Nerve Impulses"; two lectures by Dr. H. Hamshaw Thomas of the Botany School, Cambridge University, England, on "The Ancestry of the Angiosperms": (1) "General Principles" and (2) "Caytoniales and related fossil forms"; the Donald Balfour lecture by Dr. Evarts A. Graham, professor of surgery, Washington University, St. Louis, on "Primary Carcinoma of the Lung or Bronchus"; a lecture by Dean Charles Burdick, Faculty of Law, Cornell University, on "The Constitutional Law of the National Recovery Legislation"; a lecture by Dr. James Ewing, Charles Mickle Fellow for 1934, on "The General Pathological Conception of Cancer"; a lecture by Mr. Brian Cook, on "The Heritage of England"; a lecture by Commendatore Maino, Secretary of the National Society of Dante, on "From the Marshes to the Cities of Littoria and Sabandia"; four lectures, in connection with the department of physics, by Dr. Saul Dushman, Assistant Director of Research, The General Electric Company, Schenectady, N.Y., on "Van der Waals' Forces", "Activation Energy and the Boltzmann Theorem", "Surface Tension and Cohesion Phenomena in Liquids" and "The Production of Light"; 15 free public lectures by Professor John Alford, department of fine art, on "Mediaeval, Renaissance, and 18th Century Currents of European Art", "English and French Painting in 19th Century", "Contemporary Painting in Europe and England", "19th Century and Contemporary Sculpture" and "Critical Standards in Contemporary Art"; a lecture by Professor E. S. Ingraham of the University of Wisconsin for the students of the department of applied mathematics; a lecture by Mr. W. W. Bishop, librarian of the University of Michigan on "Modern Methods in the Library"; a lecture by Rabbi Budenweisen of the Jewish College at Cincinnati on "Classification of the Psalms"; a lecture by Professor J. C. McLennan on "Recent developments in radioactivity"; a lecture by Sir Charles Marston, who collaborated with Professor Garstang of Liverpool in the excavations of Jericho, on "Modern Exploration in Palestine"; a lecture by Sir George E. Schuster, member of the Executive Council of the Viceroy of India, on "The Present Indian Situation".

The following lectures were given in Convocation Hall under the auspices of the Royal Canadian Institute:

By Sir Robert Falconer, K.C.M.G. on "Canadian Pioneering in Science"; Dr. H. E. Anthony, on "From Tropic Lowlands to Perpetual Snows in Ecuador"; Professor S. A. C. Mercer, on "Explorations in Abyssinia"; Professor Edwin Grant Conklin, on "The Cellular Basis of Heredity, Development, and Evolution"; Mr. Dan McCowan, on "The Canadian Rockies in Picture and Story"; Professor H. Hamshaw Thomas, on "The Evolution of Flowering Plants"; Professor T. F. McIlwraith, on "The Science of Folk-Lore"; Dr. Lawrence M. Gould, on "Geological Adventures in Antarctica"; Professor Roderick Macdonald, on "The new Science of Oceanography"; Dr. O. E. Buckley, on "Noise in the Air and in the Ether"; Professor M. L. Fernald, on "The Origin of New Species as illustrated by some Canadian Plants"; Professor S. S. Kistler, on "An Excursion into the Realm of Colloids"; Rt. Rev. W. C. White, on "New

Light on Ancient China"; Dr. Saul Dushman, on "The Production of Light"; Professor J. R. Dymond, on "The Museum and the Wild Life of Ontario"; Professor C. R. Young, on "Extending the Limits of Construction"; Professor A. P. Coleman, on "On Mule-back in the Andes of Colombia"; Professor Robert F. Griggs, on "The Venus Fly-trap's Place in Nature"; Professor E. S. Moore, on "Earthquakes"; Professor Joseph Needham, on "Biochemistry and Morphology".

The following lectures were delivered in the University under the auspices of the National Council of Education:

Six lectures by Mr. Brian Cook, on "The Landscapes of England", "The Villages of England", "The Inns of England", "The Homes and Gardens of England", "The Cathedrals of England", and "The Parish Churches"; a lecture by Mr. Vernon Bartlett, on "European Scene"; a lecture by Mr. Lee Murray, on "Flying over the Empire".

VISITORS

Many distinguished scholars and public men visit the University in the course of the year and most of them give public lectures or address groups. Their presence and their teaching give much stimulus to both staff and students, and bring our whole academic life into touch with currents of thought in other centres of learning and in the great world of affairs.

I believe that it would be of great advantage to this University if every year we could secure for one term a distinguished scholar from abroad, to live among us and to give courses of lectures or to direct specific investigations.

Among the visitors during the year were:

A group of Australian Public School Boys under Colonel Hill of St. Peter's College, Adelaide; fifteen students and graduates of the Board of Social Studies and Training of Sydney, Australia, under Miss Eileen Fitzpatrick; The Marquis of Lothian; Rt. Rev. H. E. Patton, Bishop of Killaloe, Ireland; Dr. H. H. E. Craster, Bodley's Librarian, University of Oxford; Very Rev. C. A. Alington, Dean of Durham and former headmaster of Eton College, England; Hon. Mr. Justice Lowe of Melbourne, Australia; Mr. C. K. Allen, Rhodes House, Oxford; Professor Butenandt, biochemist of Danzig; Professor C. H. Dodd, Manchester University (since appointed to be Norris-Hulse Professor of Divinity at Cambridge University, the first nonconformist to be appointed to a Divinity Chair in Cambridge); Sir William Lewis, Times correspondent, Washington, D.C.; Mr. Robert L. Hobson, Keeper of the department of ceramics and ethnography in the British Museum.

LEARNED SOCIETIES

The following learned societies met at the University:

The American Philological and Archaeological Associations held their annual meeting in December.

The University Forestry Association and the Canadian Association of Foresters at which the principal speaker was Professor Recknagel of Cornell University.

The Canadian Educational Association at whose public meeting in Convocation Hall the speakers were Professor Briggs of Columbia University on "The Meaning of Higher Education", and myself on the subject of "The University in relation to National Life".

The Philosophical Association of the Universities of Canada at which were present members of the professorial staffs from McGill, Queen's, McMaster, Western and Toronto.

The International Association of Oto-laryngology under the presidency of Professor Perry Goldsmith.

At the spring meeting of the Ontario Educational Association, a dinner was held in Hart House in honour of Dr. F. W. Merchant, formerly Director of

Education for the Province and a member of the Board of Governors of this University. His portrait was presented to him. He gave a survey of educational development in Ontario and of the part which the University played in it.

SPECIAL CONVOCATIONS

Special Convocations were held: October 4th, when the degree of Doctor of Laws, *honoris causa*, was conferred upon Sir Henry Hallett Dale, Kt., C.B.E., M.A., M.D., F.R.S., F.R.C.P., Director of the National Institute for Medical Research, Hampstead, England; on May 31st, upon the occasion of the official opening of the David Dunlap Observatory, when the honorary degree of Doctor of Laws was conferred upon Sir Frank Watson Dyson, K.B.E., F.R.S., LL.D., D.Sc., former Astronomer-Royal; Mrs. Jessie Donalda Dunlap, philanthropist and donor of the David Dunlap Observatory, and Dr. Clarence Augustus Chant, M.A., Ph.D., F.R.S.C., professor of astrophysics in the University of Toronto; and the honorary degree of Doctor of Science upon Harlow Shapley, A.M., Ph.D., LL.D., Sc.D., Litt.D., director of Harvard College Observatory, Vesto Melvin Slipher, A.M., LL.D., Sc.D., director of Lowell Observatory, and William Edmund Harper, M.A., F.R.S.C., acting director of the Dominion Astrophysical Observatory.

ORGAN RECITALS

Dr. Healey Willan, University Organist, arranged a series of six recitals, given in Convocation Hall by Mr. Charles Peaker, Mr. Frederick Silvester, Miss Muriel Gidley, Mr. Richard Tattersall, Mr. Harvey Robb and Mr. Alfred Wilson.

JACQUES CARTIER CELEBRATION

The University had a share in the commemoration of the voyage of Jacques Cartier to Canada four hundred years ago. An important delegation came from France, under the authority of the French Government, including men of eminence in politics, literature, education and science, such as M. Pierre Flandin, Minister of Public Works and later Premier; M. Charléty, Rector of the University of Paris, and M. Henri Bordeaux of the French Academy. The delegates visited Toronto and a large group of medical men were taken to see the Hospitals and the buildings of the Medical Faculty. M. Henri Bordeaux delivered in French a most interesting lecture on "La Famille en France" to an audience which crowded the Senate Chamber.

I accompanied the delegates to the formal re-opening of old Fort Niagara on the American side of the river and took part in the ceremony, along with Hon. William Phillips, American Under-Secretary of State and former American Minister to Canada, M. Pierre Flandin, and the Hon. L. A. David of the Province of Quebec.

Subsequently on the nomination of M. Flandin, the Premier of France, the French Government conferred on me the decoration of Chevalier of the Legion of Honour; and the French Academy sent to the University of Toronto its gold medal, in recognition of the interest of this University in the study of the language and literature of France. The official record of this visit was sent to the University Library.

BENEFACTIONS

During the year the University has received the following benefactions, totalling $182,008.31:

From the Rockefeller Foundation: Child Research and Parent Education, $19,763.90, School of Nursing, $8,750.00; Eaton Endowment, $25,000; Estate of the late D. A. Dunlap, towards the David Dunlap Observatory building, $25,000; Ontario Mining Association, Silicosis research, $20,000; Estate of the

late Professor Ramsay Wright, for scholarship, $17,185.83; Carnegie Corporation: Library, University College, $4,875, Fine Art, $4,875, Workers' Educational Association, $2,932, Fellowship in Physics, $2,412, Language Study, $1,481.25; T. M. Porter bequest, $10,787.21; John Copp Memorial Fund, $5,025.33; Alfred T. DeLury Scholarship $3,514.06; Reuben Wells Leonard Fellowship and Scholarships, $3,500; Canadian National Committee for Mental Hygiene, for psychiatry, $3045; Perry Goldsmith Prize, $3000; William John Hendry Scholarship, $3000; Flavelle-Peacock Lectureship: Sir Joseph Flavelle, $1,250, E. R. Peacock, Esq., $1,250; E. C. Whitney Bequest, $2,250; Graduate Fellowships: Sir Joseph Flavelle, $1,000, Imperial Oil Company, $500, Estate of the late Sir Edward Kemp, $500; Medical Society Bursary Fund, $1,100; McMurchy Medal, $1005; D. A. Dunlap Memorial Scholarships, $1000; Standard Brands Research Fund, for chemistry, $984.07; Pharmacological Research, $950; Robert Simpson Company, scholarships, $450; Sir Edmund Walker scholarship, $450; Gertrud Davis Exchange Fellowship, $400; Library Psychology Fund, $400; William Southam Memorial Scholarships, $400; University College Alumni Matriculation Scholarship, $400; Robert Bruce Scholarship, $422.49; Pan-Hellenic Association Prizes, $300; Social Science Scholarships: Anonymous $210, St. Margaret's College Alumnae Scholarship, $75.00; Canadian Dental Association Research Fund, $250; S. R. Parsons Scholarship, Commerce and Finance, $250; J. B. Willmott Scholarship, Dentistry, $250; Boiler and Inspection and Insurance Company Scholarship, Mechanical Engineering, $150; J. A. Findlay Scholarship, Mechanical Engineering, $150; George Kennedy Scholarship, $130.56; Sarah Kennedy Scholarship, $130.56; Tracy Scholarship, Philosophy, $124; Sir John Eaton Memorial Scholarship, University Schools, $120; Darling and Pearson Prize, architecture, $100; Delta Phi Epsilon Bursary, Zeta Chapter, $100; F. W. Jarvis Bursaries $100; Maurice Hutton Matriculation Scholarship, $100; Toronto Brick Company Prizes, architecture, $100; University College Alumnae Scholarship, $100; Hollywood Theatre Prizes, French, $50; Hon. Charles McCrea for Dent McCrea Scholarship, $50; Dr. R. A. Reeve Prize, Medicine, $50; Hon. Mr. Justice Riddell and Mrs. Riddell for Riddell Scholarship, First Year Law, $30; American Society of Heating and Ventilating Engineers, $25; Canadian Medical Institute Prize, $25; Engineering Institute of Canada Prize, $25; Ontario Medical Association Prize $25; University College French Society Prize $25; St. Margaret's College Old Girls' Association, Florence M. Neelands Prize, $20; Maurice Cody Memorial Scholarship, University Schools, $10; Alumnae Prize in English, $10; Sundry small items $64.50.

In addition to the above, Mr. J. S. McLean donated certain securities having a market value in excess of $10,000, for scholarships in University College; Books of the late Mr. Frank Darling have been received for the School of Architecture; Mr. Emil Sauer, former American Consul in Toronto, has donated to the Library seventeen volumes of the "Grand Dictionaire Universal du XIX^{e} Siècle" by Pierre Larousse in the French language; Mrs. T. G. Blackstock presented for the President's Room a water colour sketch of Toronto Harbour by Sir Daniel Wilson; pictures for the Department of Mathematics were presented by Mrs. J. C. Glashan, Ottawa.

FEES AND SCHOLARSHIPS

For some years past the annual legislative grant from the Province has been substantially reduced. Salary reductions and the most rigid economy in all expenditures (unfortunately including the work of research) have been necessary to enable us to make our budget balance. The Government rightly seeking to balance its budget was this year obliged to make a further reduction in our yearly grant. The only source of new income available to the University was an increased scale of fees. A new schedule of fees—making an average increase of twenty-five per cent—was therefore adopted by the Board of Governors. At the same time the Board set aside out of the general revenue a substantial sum to be

used as a Bursary Fund in University College and in several of the Faculties, in order that the increase in fees might not deprive an able and yet needy student from continuing his course. By the help of this fund and by the aid of the Alumni Federation Loan Fund, the Students Administrative Council Loan Fund, the Wallberg Memorial Loan Fund for the Faculty of Engineering, the Students' Engineering and Medical Societies' Loan Funds, it is confidently hoped that no worthy student will be held back by reason of shortage of funds. In making use of the Board's Bursary Fund special consideration will be given to students who live outside Toronto and on whom in consequence the burden of college expenses rests more heavily. An effort is thus being made to equalise the educational opportunities of city and country.

The value of a system of scholarships in determining the academic tone of a university is widely recognised to-day. The President of the Carnegie Foundation for the Advancement of Teaching expresses in a recent report the opinion which prevails among educational leaders. "It is essential", he says, "that every State University or College have an adequate system of scholarships, competitively awarded, which shall be ample both in numbers and in amount, to prevent both the loss of exceptional talent to the service of society, and injustice to the highly competent poor. . . Society needs the services of such students far more than the students themselves need the University training and the professional career that would follow it. At present there is no assurance that we are fully intelligent in selecting our future physicians, lawyers, engineers and teachers, when high fees and long continued expense are permitted to operate as factors in that selection."

Individuals and groups of individuals (such as alumni associations) could render great service to capable young men and women, to the University, and to the country by establishing scholarships. These might be annual gifts. In these days of low interest and heavy taxation it would be much easier for large numbers of people to give out of current income than to set aside an endowment.

The Principal of University College points out that this policy of generous aid through bursaries and scholarships has been abundantly justified in relation to the students of his own college—the State institution in the general federation. A coherent system of assistance based on need and scholarship has given substantial help to students who otherwise would have to forgo the hope of a university education.

THE DUNLAP OBSERVATORY

The outstanding event of the academic year was the opening at Richmond Hill of the David Dunlap Observatory, and its formal presentation to the University by the generous donor, Mrs. Jessie Donalda Dunlap, on the afternoon of Friday, May 31st, 1935. This also marks a decisive advance in the development of Canadian astronomy. The corner-stone of the administrative building was laid by Mr. David Moffat Dunlap on September 10, 1932, and its construction proceeded rapidly. Then the giant dome for the 74 inch telescope was erected, and soon within it the massive mounting of the telescope. In Corning, N.Y. on June 21, 1933, was cast the huge disc of "pyrex" glass; in Newcastle-on-Tyne in England, this was shaped to its exact form by the firm of Sir Howard Grubb, Parsons and Company, who had built the mechanical parts of the instrument.

For years Professor C. A. Chant had hoped that the University of Toronto might possess a large observatory, which would become a world centre of astronomical research. Mr. D. A. Dunlap had expressed his interest in the project, and after his death Mrs. Dunlap determined to present such an observatory as a memorial to her husband. Thus the largest telescope in the British Empire came into being.

The date of the opening, the 31st of May, was chosen, because on that day Professor Chant reached the age of seventy. Distinguished astronomers came from afar to be present on this occasion. I presided, as President of the Uni-

versity; Chancellor Wallace of Victoria College read the prayer of dedication; a golden key to the observatory was handed to Mrs. Dunlap by Mr. A. S. Mathers of the firm of Mathers and Haldenby, the architects who designed the building. With it Mrs. Dunlap opened the main door of the Administration Building and formally presented it to the University through Dr. Bruce Macdonald, the Chairman of the Board of Governors, who formally accepted it, and made a fitting acknowledgment of the magnificent gift. Addresses were made by His Honour, Dr. Bruce, the Lieutenant-Governor of the Province; Professor Chant; Mr. Cyril Young, General-Manager of the English firm which made the telescope; Sir Frank Dyson, K.B.E., the Astronomer Royal from 1910 to 1933; Dr. Heber D. Curtis, Director of the Observatory of the University of Michigan; Professor Harlow Shapley, Director of the Harvard Observatory (three of whose students, Dr. Frank S. Hogg, Mrs. Helen S. Hogg, and Dr. Peter Millman are members of our astronomical staff); and W. E. Harper, M.A., Acting Director of the Dominion Astrophysical Observatory at Victoria, B.C.—the first graduate under Professor Chant in the division of astronomy and physics, established in 1906. In the evening at the Convocation Dr. V. M. Slipher, Director of the Lowell Observatory, Flagstaff, Arizona, and the Rt. Hon. W. L. Mackenzie King also spoke.

Congratulatory letters were received from Sir Arthur Eddington of Cambridge, England; Sir James Jeans; Professor Schlesinger of Yale University, President of the International Astronomical Union; and Mr. R. A. Gray, General Secretary of the Royal Astronomical Society of Canada.

Thus has been inaugurated a new era in the teaching of astronomy in this University and in furthering astronomical research in Canada. Professor Reynold K. Young succeeds Dr. Chant, as the new director of the observatory.

CONCLUSION

I would add a few reflections on the general life of the University.

1. In a university like ours, made up of different faculties, there is always presented the problem of co-ordination, co-operation, and mutual understanding between them, without any sacrifice of the initiative, vigor and special aim of each. Faculties and even departments in faculties cannot live and work in water-tight compartments. They can develop their own specialties to the highest degree; but they can avoid possible duplications and they can cultivate and maintain free and intelligent relations with one another. There is a unity of knowledge, a kinship among all the sciences.

The university "must develop a growing sense of its place as a whole in the educational scheme". Isolation or separativeness on the part of any of its constituent members is neither desirable nor possible.

2. Many thoughtful educational leaders on this continent are anxious about the future of higher education. The quality of university work is seriously threatened by diminished income. In many places research is curtailed or discontinued, library development is at a standstill; the cessation of normal promotions and salary advances for the staff is affecting its *morale*. It is true that universities and their staffs have on the whole recognised the emergency and have carefully made the sacrifices required, and have done their best to meet the demands of the situation. But the question is raised, especially in the universities across the line, whether reductions and curtailments which were regarded as emergencies can indefinitely continue without ultimately impairing the quality of our institutions of higher learning. There comes a time when the cutting of budgets does reduce the efficiency of the work. This University has been well treated by the Legislature. It has necessarily shared in general reductions of expenditure. It is grateful for what has been granted it. It hopes that the emergency will not last so long as to weaken or restrict its educational service.

The strength of a university's support lies in the conviction of the people that it is wisely and usefully serving the highest needs of the community. If this

service is to continue, there must be constant self-examination on the part of the university to determine whether it is meeting the requirements of the new days and whether its growth is healthy and in the right direction. Dr. H. W. Chase of New York University pertinently remarks in his annual report: "In the end social institutions prosper or wane in accordance with their social usefulness. No university can to-day afford simply to rest on a tradition of former usefulness, nor can it rely merely on conformity to a standardised pattern. Strength, and in the end support, will come with vitality and originality." Yet in adaptation to change fundamental ideals must not be lost.

3. The perennial question of university freedom is being raised afresh on this continent by the requirement in some States of the American Union that a loyalty oath be administered to all teachers in educational institutions of all grades, including universities. The teachers resent the implication of disloyalty and leading journals point out the ultimate deadening effect of such action. President Burlingham of the Harvard Alumni Association writes: "Loyalty oaths are an entering wedge in America for the kind of totalitarian state which regiments to a single goose-step every school, every church, every concert hall, theatre, laboratory, or other cultural interest". The Boston *Herald* writes: "The American's traditional right to pursue, unrestrained and unafraid, the searching of his mind will presently vanish. We shall no longer be a country of free men but of robots." President Conant of Harvard University in *The Atlantic Monthly* says: "Abandon our faith in the value of the dispassionate search for the truth, and by a series of definite steps we shall find ourselves living in a spiritual prison with an organised mob for our jailers." President Hutchins of the University of Chicago adds this comment: "I venture to suggest the value of encouraging intelligent, calm and dispassionate inquiry into methods of bringing order out of chaos. Wherever freedom of inquiry, of discussion, and of teaching has been abolished, freedom of the press, freedom of religion, and freedom of speech have been threatened or abolished too." He seeks to define the essential in a university: "A university is a community of scholars. It is not a kindergarten; it is not a club; it is not a reform school; it is not a political party; it is not an agency of propaganda. Without freedom of inquiry, freedom of discussion and freedom of teaching a university cannot exist. Without these a university becomes a political party, or an agency of propaganda. It ceases to be a university. The university exists only to find and to communicate the truth. If it cannot do that, it is no longer a university." What controlled universities can become is seen in the fettered institutions of communistic and super-nationalistic states.

The case for the intellectual freedom of the University could not be better stated. Our people are not afraid of the truth; they hope that from discussion and investigation truth will emerge. This University of Toronto has during the course of its history enjoyed a full measure of academic freedom, and has sought to remember that correspondingly great is its responsibility to use that freedom with wisdom and good taste.

The fundamental fact is that the task of the University is not propaganda, but education; not to win a case, but to present the truth. A college instructor must of course have and hold his own convictions, but the all important thing is that he should do his work of investigation and teaching in the temper and spirit of science. This means refusal to yield to the tendency to forget or overlook facts which do not fit in with theories, and to select facts which fit the theories. Academic freedom lays on the University the responsibility to allow freedom of research and of teaching in the true spirit of science, but it also lays on the instructor the responsibility to approach his work not as a propagandist or partisan, but as a seeker for the whole truth, with open mind, fair judgment, and regard for all the facts.

Further, the instructor is also a citizen, bound outside the class-room by the same laws which regulate or even restrict the general body of citizens. The public

are apt to assume that any statement made by a university instructor is in some way an official utterance by the university. But members of a staff are a fair cross section of the community in regard to their political and economic views. They differ from one another in temper, outlook and opinion, as do members of any group of intelligent men.

It has often been observed that as members of a profession they tend to be mainly conservative in outlook; but in the larger universities, like our own, there is a natural diversity of view on matters which lie outside their chosen specialty of teaching and research. President Hutchins of Chicago says: "As a matter of fact I have never been able to find a Red professor. I have met many that were conservative, and some who would admit they were reactionary. I have met some who were not wholly satisfied with the present conditions in this country. I never met one who hoped to improve them through the overthrow of the government by force. . . The views of these men who are studying social problems are worth listening to, for these men are studying these problems in as unbiased and impartial a fashion as any human being can hope to study them." This is probably true of most university faculties. The instructor possesses all the rights of a citizen.

But to possess these citizen rights does not mean that one must constantly insist on expressing them in public. A man may have the legal right to express views which might jeopardise the wider interests of his institution and his colleagues, but the possessing of this legal right suggests the question whether he has a moral right so to do. A university administrator may sometimes find himself in the position of defending the right of free speech on the part of an individual, although he may strongly disagree with the views expressed and consider the individual's course of action lacking in wisdom and seemliness and regard for others. Chancellor Chase of New York University tersely puts the responsibilities of both university and instructor: "If the instructor has the right (as he has) to academic freedom, the university has the right to expect of him in its expression good taste, a decent regard for his colleagues . . . and that in his teaching, he will not descend to the plane of the propagandist".

The rights and responsibilities of both universities and teachers must be fully recognised. Any university, worthy of the name, must maintain its intellectual freedom, what our new Governor-General calls its "freedom of spirit", against all tyranny and assault; otherwise its essential character is lost. On the other hand, this very privilege of freedom imposes on all teachers a responsibility in speech. In the field of investigation, we must remember that the business of the university is the search for truth; in the field of conduct we must equally remember that expression should be marked by "dignity, good taste and the decent restraints of scholarship".

4. One broad aim of a liberal education is to prepare men and women for the intelligent and effective discharge of citizenship. Beyond all other forms of government a democracy rests on an educated body of citizens. The universities have an increasing responsibility and opportunity to preserve a sane democracy. Undergraduates must be so trained, so stimulated to think for themselves, and so familiarised with the best thought of the past and present, that they may be adjusted to the life which as graduates they must presently live in this perplexing world. If a social or economic order under which free men and women can live is to be maintained in the world, clear thinking must prevail over prejudice and emotion. It is one of the chief tasks of the university to promote and protect this intellectual clarity, this "creative freedom" which alone will preserve our inherited political and religious freedom. The effort to retain and maintain freedom is one of the characteristic struggles of this age. Youth is capable of boundless sacrifice for an ideal, particularly if that ideal is embodied in a person. In one country after another youth is sacrificing personal freedom to what it conceives to be national interest. This attitude does reinforce the fact that we owe a duty of service and sacrifice to our country; we are not mere recipients of

its privileges and bounty. Freedom of thought in higher education will perhaps prove the best means of reconciling the liberty of the individual and the sacredness of personality with public service and devotion to one's country as an integral portion of the society of all nations; it will also prove, I believe, the best defender and preserver of those free institutions which are the heritage of a thousand years of national travail.

5. On the 8th of June, 1843, King's College—our immediate academic ancestor—indeed ourselves under another name—was officially opened in the Legislative Buildings in Toronto. Bishop Strachan, the first President, gave an address, which was a restrained yet forceful review of the efforts which had culminated in the day's ceremony. In closing his address he expressed a hope for the future: "Here among our youth we may confidently look for generous emulation, a noble desire for honest fame, an ardent love of truth, and a determination to surpass in knowledge and virtue the most sanguine hopes of their friends and parents. In this institution many holy aspirations will doubtless arise in minds yet untainted and which by Divine grace shall become a panoply to protect them through life, against all the temptations that can assail them. And the time will come, when we too can look back to our own line of celebrated men brought up at this seminary, and whose character and attainments shall cast a glory around it, and become, as it were, the genius of the institution".

The hopes of the founders are being realised year by year, as young graduates go forth to serve their God, their country and mankind, and as old graduates play well their part in the intelligent citizen life of this country. Their intellectual attainments, their moral character, and the spirit of service that animates their endeavours, still cast a halo around their *Alma Mater* and are the genius of this University.

All of which is respectfully submitted.

H. J. CODY,
President

December 12, 1935

APPENDIX A

(1) Report of the Principal of University College.
(2) Report of the Dean of the Faculty of Medicine.
(3) Report of the Dean of the Faculty of Applied Science and Engineering.
(4) Report of the Dean of the Ontario College of Education.
(5) Report of the Secretary of the Faculty of Household Science.
(6) Report of the Dean of the Faculty of Forestry.
(7) Report of the Dean of the Faculty of Music.
(8) Report of the Dean of the School of Graduate Studies.
(9) Report of the Dean of the Faculty of Dentistry.
(10) Report of the Director of the School of Hygiene.
(11) Report of the Librarian.
(12) Report on Research.
(13) Publications.
(14) Report of the Director of University Extension and Publicity.
(15) Report of the Director of the Department of Social Science.
(16) Report of the Director of the School of Nursing.
(17) Report of the Director of the Department of Military Studies.
(18) Report of Health Services.
(19) Report of the Warden of Hart House.
(20) Report of the Director of the Connaught Laboratories.
(21) Statement regarding the Museum of Archaeology.
(22) Statement regarding the Museum of Biology.
(23) Statement regarding the Museum of Geology.
(24) Statement regarding the Museum of Mineralogy.
(25) Statement regarding the Museum of Palaeontology.

(1) REPORT OF THE PRINCIPAL OF UNIVERSITY COLLEGE

(Professor M. W. Wallace, M.A., Ph.D.)

I have the honour again to submit to you my annual report as Principal of the College.

The income available for the James Harris Matriculation Scholarships has hitherto been derived from bonds which have been called during the past year. This fact has made it necessary to re-invest the capital funds at a much lower rate of interest. The result is that we have lost one-third of our income from this source, and the College Council has been compelled to recommend to the Governors a reduction in the number of these scholarships from twelve to eight.

Under these circumstances it gives me very special pleasure to report a magnificent addition to our list of scholarships. Mr. J. S. McLean, a graduate of the College in 1896, and President of Canada Packers Ltd., has given us shares of that Company which produce an annual income of $600. With the approval of Mr. McLean the College Council is using this sum to found four new matriculation scholarships of the value of $150 each to be awarded for proficiency in four groups of subjects of which mathematics, science, classics and modern languages respectively form the centre. Pending a final determination of their policy in this respect, the Governors have agreed to grant free tuition for the coming year to the holders of these scholarships. This generous addition to the College funds will be a fine incentive to successive generations of students, and an enduring record of Mr. McLean's interest in the College of which he himself is a brilliant graduate.

Another very generous gift to the College has been received from Mr. K. B. Conn in the form of a scholarship for $100 to be awarded annually for the next five years. This scholarship, which is to be known as the University Tours Association Scholarship is a gratifying evidence of the warm interest in his alma mater on the part of Mr. Conn who has been for several years since his graduation actively engaged in important work for the University as Secretary of the Alumni Federation and as editor of the *University Monthly*.

The importance of scholarships and bursaries in enabling the College to extend its opportunities to as large a number of able students as possible increases with every passing year. How modest our own efforts have been in this direction is illustrated by the following extract from an article by A. Chester Hanford, Dean of the College, Harvard University.

"The scholarship policy of a college should be so worked out as to accomplish two purposes. In the first place, scholarships should serve as an incentive to scholarly effort, or as a form of recognition for outstanding academic achievement. Secondly, they should provide financial assistance in those cases where the circumstances of a student with a high record are such as to require aid. . . . We have by combining smaller scholarships and by making larger awards from several of our larger funds increased the number of scholarships ranging from $600 to $1000 to thirty-seven, as compared with ten such awards last year."

The excellent records which our own scholarship holders have made in the annual examinations is a vindication of the soundness of our policy. In addition to the matriculation scholarships now awarded annually from the Leonard Bequest we have this year been able from the same source to assist in-coming students through bursaries to a total of $800. Financial help of this kind, given only after very careful consideration of each case, and only to young students of proved ability, has frequently turned the scale and made it possible for quite brilliant matriculants of scanty resources to enter on a university course. On the whole the awards have justified themselves in a remarkable way. It is a great satisfaction to know that from the same source considerable funds are at

the disposal of the College for further similar aid during course, especially in view of the greater difficulties that will face the student owing to the coming increase in fees.

For many years the women graduates of the College have shown their continuing interest by substantial gifts. This year we are indebted to the Alumnae Association for the furnishing of the new Common Room in the Women's Union at a cost of $650. We can only once more express our sincere gratitude for such generosity.

The College Prize List has been enlarged this year in a pleasing manner through the presentation by the Hollywood Theatre of two prizes of $50 for excellence in the French language, one for competition in the honours course and one in the pass course of any undergraduate year.

During the past session the College has continued with success its effort to keep in touch with a wider non-academic circle by organising again a free series of weekly public lectures. This year the lectures dealt with aspects and problems of the national life of Canada, the majority of them being kindly contributed by the following members of the University staff; Professors Arthur, Brady, Creighton, Glazebrook, Innis, E. W. Macdonald, Chester Martin, Underhill and Sandiford. Professor Jeanneret and Professor J. F. Macdonald of the College staff spoke on French Canadian and English Canadian literature, respectively.

The Alexander lectures were delivered in Hart House Theatre by Professor E. E. Stoll of the University of Minnesota on "Shakespeare's Young Lovers", and were attended by large audiences. Next year we hope to welcome Professor F. B. Snyder of Northwestern University, the biographer of Burns.

It is with great regret that I have to record the resignation of two members of the College teaching staff. Professor F. C. Green of the French department leaves us to become head of the Department of French in the University of Cambridge, and Professor E. K. Brown of the department of English to become head of the Department of English in the University of Manitoba. The College is very proud that members of its staff should be called to fill such important posts, but it is impossible to minimise our own very great loss. Both of these men had made a reputation for themselves far beyond the bounds of this university: both had helped to make University College a centre of the truest university activity. Their colleagues unite in wishing them success in their new fields of activity.

I should have recorded last year the fact that a Rhodes scholarship had been awarded to Mr. Gordon Skilling, a student of the fourth year. The same honour has been won this year by Mr. Arnold C. Smith of the third year. Mr. Smith is ably maintaining his record which began with his winning of the Prince of Wales scholarship at matriculation.

It is a pleasure to be able to assist Professor Alford in getting the work of the newly constituted department of Fine Arts under way by putting two rooms in the College building at his disposal for lectures and study.

I wish to express to the Governors my very sincere appreciation of their courtesy in granting to me leave of absence from the early part of March until the end of the session in order that I might make a somewhat extended visit in the near East during the best season of the year. I am also greatly indebted to Professor Needler who during my absence took upon himself the duties of acting-principal, and to Professor Knox who acted as head of the department of English.

(2) REPORT OF THE DEAN OF THE FACULTY OF MEDICINE

(J. G. FitzGerald, M.D., LL.D.)

During the academic session which closed on June 30th, 1935, much satisfactory work has been accomplished in the Faculty of Medicine in both the fields of medical research and teaching.

Forty-eight years have passed since in 1887, this Faculty was established.

Momentous changes have taken place in medicine in this University during that period. The length of the course has been increased from three to six years. A session now consists of eight months: in 1887 it was only six. At the outset, there were no whole time teachers, or research workers in the medical sciences: these now number more than one hundred.

At present, there are eight laboratory departments in this faculty. Their staffs are concerned solely with teaching and research. The four major clinical departments have more whole time personnel to-day than in the entire Faculty of Medicine twenty-five years ago.

New departments have been created. These include Medical Research, Hygiene and Preventive Medicine, Biochemistry, Paediatrics, Pathological Chemistry, Psychiatry, Radiology, and the Medical Art Service. In all of these, there are elaborate facilities and resources, both in personnel and material, which have been made available for the advancement of medical knowledge, and the conduct of medical teaching.

It is impossible here to explore in detail the significance and consequences of all the forward steps taken in these years, but it is pertinent to enquire whether, as a result, we train better doctors, or train doctors better. Is the raw material which enters the Faculty of Medicine suitable for "processing"? Do we admit the number appropriate for our present resources in clinical and laboratory facilities? Perhaps the answers to these questions are likely to be opinions rather than facts—speculations of little practical value. However, there are certain points upon which there seems to be very general agreement.

First—it now requires much more time and money to train a medical practitioner than it did fifty years ago. Second—the community is expected to contribute much more largely than formerly, to the sum required for this longer preparation. It is immaterial whether this money comes through the state, or in the form of interest on endowment—the community must provide the funds.

This being true, is it not desirable to establish more satisfactory methods for the selection of students? To choose those who are most likely to make an adequate return to society for the assistance which has thus been afforded them? Furthermore, should they not be socially-minded and show some aptitude for the study and practice of modern medicine? And, finally, and most essential this, give evidence of possessing those certain traits of character without which no man, or woman, can hope to become successful practitioners of medicine?

The present methods of admission to this Faculty, without limitation, or selection, except by the possession of academic qualifications, cannot, by any stretch of the imagination, be regarded as adequate or satisfactory criteria. This situation surely calls for drastic revision. We have too many medical undergraduates, and the obstacles in the way of their rejection or elimination, constitute a case for reform.

To bring this about, the Faculty of Medicine is prepared to assist and collaborate to the fullest extent in any plan deemed suitable and worthy of trial.

The total registration for the session was 842, of whom 26 were graduate and 816 undergraduate students.

Grateful acknowledgment is again tendered Sir Frederick Banting, Professor C. H. Best and the Connaught Laboratories for assistance from the Medical Research Banting Fund, the Medical Research Best Fund, and the Connaught Laboratories research funds, towards the support of work carried on in various departments of this Faculty, formerly supported by appropriations for the Committee for Experimental Research in Medicine. This most generous recognition of the pressing needs of certain departments, is further evidence, if such is necessary, of the fine spirit of co-operation manifest in this Faculty. In the reports of the heads of several departments reference is made to the helpful relationship obtaining between various departments. It is to be hoped that this spirit will continue to animate those responsible for the direction of all depart-

ments. Only thus will it be possible to maintain the excellent teamwork and co-ordination of activities and interests so evident at the present time.

The members of this Faculty appreciate highly the successful efforts of the President and Board of Governors to lessen the salary deductions levied upon members of the staff in recent years. The imperative necessity of husbanding the substantially diminished university income of the last three years has been thoroughly understood, and members of the teaching staff have been most anxious to assist in the times of financial stress through which nearly all institutions have passed. It is hoped that in the near future there may be further substantial improvement in the situation.

Sir Frederick Banting in his report upon the work of the Department of Medical Research, makes reference to the very generous gift of $20,000, contributed by the Ontario Mining Association for the continued support of the work on Silicosis being carried on under his direction, work furthermore of a very fundamental and highly important character and referred to only very briefly in the report of the department of Medical Research. The provision of funds for the support of research in all fields of medical science is one of the best possible investments for the individual or the community. This fact is being more generally recognised year by year.

A very unusual and unique step was taken this year by the undergraduate Medical Society. It is novel, at least as far as this University is concerned, and so may here be appropriately referred to in some detail. A regulation of the Board of Governors requires that every student proceeding to a Doctor's degree in the Faculty of Medicine is required to pay to the Bursar at the opening of the session an annual fee of $3.00 for the maintenance of the Medical Society. The administration of the funds thus obtained is entrusted to the elected representatives of the Medical Society—the Executive. Because of the fact that the money is wisely expended and the modest resources husbanded, there has always been, in recent years, a surplus on operations. The Executive Committee of the Society, at the suggestion of Dr. J. W. Magladery, (a distinguished member of the graduating class) proposed that a vote of the Medical Society should be taken to ascertain whether the majority of members approved of a proposal to utilise the surplus to set up a Bursary Fund to aid worthy students in need of financial assistance. The vote was taken. Very great interest was manifested in the question; more than 80 per cent of students voted, and there was almost unanimous approval of the proposal. As a result, a formal communication was received by the Faculty and submitted to the Board of Governors, in which this most generous action of the medical undergraduates was outlined. It has been accepted with pleasure and gratitude. It will very usefully supplement the loan funds, bursaries, scholarships, etc., now available.

I desire to express the most cordial appreciation of the Faculty to the medical undergraduates in this unversity for the wisdom and generosity thus displayed.

More funds for bursaries for deserving students of character, aptitude and ability who desire to study medicine but are unable to do so upon their own modest resources is a great need in this University. I wish to strongly recommend to friends of the University and of this Faculty in particular, the desirability of recognising this need and providing for it in a truly generous fashion.

Outstanding events during the year included a visit from Sir Henry Dale, Director of the National Institute for Medical Research, who addressed a large meeting in Convocation Hall in October just after he had been made the recipient of the honorary degree of Doctor of Laws. In March Professor James Ewing of New York, Charles Mickle Fellow for 1934, delighted an overflow audience in the North lecture room of the medical building when he reviewed in an exceedingly comprehensive and interesting fashion the present position of the cancer problem. On Lister Day, April Fifth, Professor Evarts Graham delivered the eighth Donald C. Balfour lecture in Surgery, on the subject of "Primary Car-

cinoma of the Lung or Bronchus". It was a splendid address and was enjoyed by a large audience assembled in Convocation Hall.

His Honour, the Lieutenant-Governor, again graciously invited the lecturer, the President of the University, certain members of the Senate and the heads of departments to lunch at Government House. This delightful occasion was greatly enjoyed and acknowledgment and warm thanks are here extended to His Honour. The lecture on this occasion was delivered at four o'clock in the afternoon, a change in time which enabled a great many more than usual to attend this interesting event.

The Faculty of Medicine expresses appreciation of the generous action of the Honourable the Minister of Health of the Province of Ontario, Dr. J. A. Faulkner, in providing for the establishment of the Faulkner Gold Medal in Psychiatry. This is to be awarded annually by the Senate on the recommendation of the Council of the Faculty of Medicine, to the physician who takes the highest standing in the examinations of the post graduate course in psychiatry, conducted under the direction of the head of that department. Thanks also go to the anonymous benefactor who most generously donated a sum of three thousand dollars for the endowment of a prize to be known as the "Perry Goldsmith Prize in Oto-Laryngology". This prize, consisting of the income derived from the above sum, may be awarded annually by the Senate upon recommendation of the Council of the Faculty of Medicine, to a graduate in medicine who, as a member of the staff in oto-laryngology of not more than ten years' duration, has made a worthy contribution to advance sound knowledge of this special field; the award shall be made upon the recommendation of the head of the department of oto-laryngology.

The generosity of Lambda Chi Alpha Alumni Association in providing in memory of one of its late members, Ronald S. Saddington, M.B., B.Sc. (Med.) who died while engaged in research at the Rockefeller Institute for Medical Research, New York, a gold medal to be awarded to the student in the fourth year standing first in pathology; is gratefully acknowledged.

Warm thanks are extended also to Professor and Mrs. W. B. Hendry for their generosity in contributing a sum of three thousand dollars for the endowment of the William John Hendry Memorial Scholarship in obstetrics and gynaecology. This scholarship has been established in memory of the son of the benefactors, the late William John Hendry, B.A., M.D., gold medallist in Medicine in 1933, whose tragic death in Baltimore while engaged in experimental work at the Carnegie Institution of Washington, was referred to in the report of the Dean of the Faculty of Medicine last year. The scholarship is to be awarded annually to the student in the sixth year of the medical course who has obtained the highest standing in the final examinations in obstetrics and gynaecology. The award is to be made on the recommendation of the head of that department, an appointment held by Professor W. B. Hendry from 1922 until his resignation this year.

Thanks are also extended to the women of the congregation of the United Synagogue who have generously offered to provide an annual scholarship of the value of fifty dollars.

Finally, reference must be made to the provision of the John H. Copp Memorial Scholarship, provided from the fund collected in memory of the late John H. Copp, who at the time of his sad and untimely death was a student in this Faculty. It is intended that this scholarship shall be awarded to a student in the fourth year in medicine. The award is to be based upon considerations of character, scholarship, athletic ability and general interest.

It is with satisfaction and sincere gratitude that the receipt of these benefactions are herein acknowledged.

The Charles Mickle Fellowship has this year been awarded jointly to Dr. Edward Mellanby and Mrs. May Mellanby in recognition of their contribu-

tions to our knowledge of rickets and to a better understanding of the dietetic factors responsible for perfect and imperfect teeth.

Members of the Faculty have been honoured by election to distinguished offices or made recipients of awards of merit. Sir Frederick Banting has been elected a Fellow of the Royal Society of London. He has also been awarded the Gold Medal in Therapeutics by the Court of the Royal Societies of Apothecaries, London. Professor C. H. Best has been elected a member of the Council of the American Physiological Society. Professor V. E. Henderson has been chosen as President of the Federation of American Societies for Experimental Biology. Professor W. E. Gallie delivered the Shattuck Lecture in Boston in June. Professor Oskar Klotz has been elected President of the Society for Experimental Pathology and President of the Academy of Medicine, Toronto.

The following members of the Faculty were honoured by the award of the King's Silver Jubilee Medal;—The Dean, Sir Frederick Banting, Professor C. H. Best, Professor C. B. Farrar, Professor Emeritus J. T. Fotheringham, Professor Duncan Graham, Dr. H. C. Parsons, Professor N. S. Shenstone and Dr. H. A. Beatty, a former Professor on the staff in the Department of Surgery.

Dr. R. L. Noble, Ellen Mickle Fellow for 1934, has been awarded the Leverhulme Scholarship of the Royal College of Physicians of London, tenable at Middlesex Hospital Medical School. Dr. Noble, working with Professor E. C. Dodds in the Cortauld Institute of Biochemistry at the Middlesex, has made important discoveries in the investigation of the effect upon animals of extracts of the posterior pituitary gland. Dr. J. W. Magladery, of the class of 1935, has received a Rhodes Scholarship from Ontario.

Post graduate courses in psychiatry, in surgery, in paediatrics and in physical therapy have been arranged and there is a very definite increase in interest manifested in such courses. The pressure of undergraduate teaching with a student body of more than eight hundred and often a paucity of clinical material, especially on the medical side, makes it extremely difficult to accomplish as much in the above direction as is admittedly desirable. As in the past, members of this Faculty participated in the extra-mural post-graduate courses given under the aegis of the Canadian Medical Association and of the Ontario Medical Association. In all sixty-one members contributed one hundred and nine lectures or addresses during the year.

This year marks the retirement of two very well known and highly respected members of this Faculty. Professor W. B. Hendry, from the headship of the department of obstetrics and gynaecology, to which he was appointed in 1922, and Dr. Samuel Johnston who retires as associate in therapeutics in charge of anaesthesia. For many years Professor Hendry has given loyal and distinguished service to this University in many capacities. As a teacher he was admired and held in high esteem. He served as Commanding Officer of No. 4 Canadian (University of Toronto) General Hospital with distinction and he was beloved by all ranks. He has taken an active and intelligent interest in the affairs of the University of Toronto Athletic Association and has been a warm supporter of the University Health Service. Professor Hendry has reached the age of retirement as a member of the Staff of the Toronto General Hospital. He will be greatly missed by his colleagues in this Faculty. He carries with him into retirement the warm affection, good will and best wishes of his associates in the Faculty of Medicine. Professor Hendry has been made professor emeritus of obstetrics and gynaecology. Dr. Samuel Johnston has given faithful and devoted service to the University in this Faculty for many years past. He is well known as a fine teacher and one deeply interested in the advancement of his specialty. Dr. Johnston was also active in other fields of community service. For a number of years he has been a valued member and executive of the Smoke Abatement Association. His many friends in the Faculty of Medicine extend to him cordial good wishes for the future, and I should like to express to Dr. Johnston much

appreciation for the service he has rendered as a member of the department of therapeutics.

It is with the greatest possible pleasure and satisfaction that the members of the Faculty learned of Professor Andrew Hunter's appointment as professor of pathological chemistry and head of that department, and as a research member of the Connaught Laboratories. Professor Hunter, a member of this Faculty from 1915 to 1929, returns to Toronto in the autumn of 1935 and will be most warmly welcomed by a host of friends who are indeed delighted that after a sojourn of six years in the University of Glasgow, he will once more be one of us. Dr. Harold deW. Ball this year completes twenty years of loyal service as a member of the department of anatomy. I should like to extend to him thanks on behalf of the University for his long and faithful efforts as a part-time member of the staff, devoting his time and energies freely to the teaching of histology. Dr. Ball is a fine representative of those members of the medical profession who, on part-time appointments, receiving very modest honoria, have given unsparingly of their time, ability and energy to serve this University. Many others who have rendered similar service may here be accorded grateful recognition.

The combined course in Arts and Medicine has been lengthened from seven to eight years. This is provided for in the following regulation adopted during the session, namely;—"A student who enrolls in the first year of the honour course in biological and medical sciences in the Faculty of Arts in 1935 and thereafter and who graduates in this course with at least third class honours, may enroll in the third year of the Medical Course and complete the requirements for the degree of Doctor of Medicine in a further period of four years". This is in conformity with what obtains in the British Isles and the United States.

The College of Physicians and Surgeons of Ontario has ceased to conduct examinations. The College now requires, in lieu thereof, the certificate of the Medical Council of Canada, indicating that the holder of the same has passed the examination of the latter body. The College has also undertaken to accept certificates issued by approved "Private Schools" in Ontario in satisfaction of its requirements relating to matriculation, in lieu of departmental certificates.

For some years it has been realised that the fees charged in the medical course were much lower than those in other Universities. This year, because of the reduction in the unversity grant, the Board of Governors have increased the fees in all years. Even the new scale, however, is substantially lower than in other schools, whose faculties and resources for the training of medical students are not equal to those possessed by the University of Toronto.

It is with sincere regret that the following deaths during the present year must be recorded;—Professor Emeritus N. H. Beemer, Dr. D. N. Maclennan, Professor Emeritus D. J. G. Wishart, Professor Emeritus Alexander McPhedran, Dr. Geoffrey Boyd, Dr. A. D. McKelvey, Professor Emeritus G. H. Burnham, Professor Emeritus N. A. Powell, Professor J. J. R. Macleod, formerly Associate Dean of this Faculty.

Professor Beemer gave many years of service as extra-mural professor of mental diseases. His kindly manner and personal interest in individual students endeared him to all who came into contact with him. Dr. Maclennan was an excellent clinical teacher who gave freely of his experience to his students. He, too, will be greatly missed. Professor Gibb Wishart was for many years a most active and valuable member of the faculty council as well as a fine teacher. He was for sometime chairman of the committee on Curriculum and Examinations. He was a leader in the medical profession, a man of sterling character. He will be sadly missed by a wide circle of friends and former students. Professor Alexander McPhedran, head of the department of medicine from 1900 to 1919, was a great physician and one of the most distinguished clinical teachers of his time. There can be little doubt that he exercised a greater influence than any other on the minds of the students of his day. He was clear, sharp and incisive.

His clinical lectures were models of lucidity and comprehensiveness. His bedside clinics, too were extraordinarily good. No former student of Professor McPhedran will ever cease to be grateful to him for the part he played in their professional training. This Faculty has lost one who shed much lustre upon it. His unswerving loyalty, high ideals and exacting demands, permitting of no compromise, exercised a profound influence for good during the early formative period of this Faculty. The present members of the Faculty of Medicine pay silent tribute to one of their former colleagues and leaders. Dr. Geoffrey Boyd, a former associate professor of oto-laryngology, was an excellent clinical teacher and one of the leaders in his own field of clinical work. He was a man of loveable character, with a great capacity for friendship. His sudden death, at a comparatively early age, was a great shock to a very wide circle of friends and acquaintances. Dr. Alex McKelvey, who for a short time was a member of the same department, was a splendid clinician who was, unfortunately, unable to continue as a clinical teacher because of a serious disability. He carried on a large practice for a number of years with great fortitude and courage. He was a man of fine character which endeared him to patients and colleagues. His early death is a great loss to the profession and the community. Professor G. H. Burnham and Professor N. A. Powell were among the early members of the faculties of the old Trinity and Toronto Schools of Medicine, both well and favorably known to a long line of students. Professor Burnham was active in the practice of his profession until very shortly before his death. He retired from this Faculty a number of years ago. He served faithfully the best interests of the University. Professor N. A. Powell was an outstanding member of the profession. His teaching, both clinical and didactic, was coloured by a most engaging personality and he was exceedingly popular with his students. He was zealous in many good causes. For long he was a leader in the Academy of Medicine, Toronto; a pioneer in the fight against tuberculosis and a member of the Board of the National Tuberculosis Association. He lived to see many of the undertakings in which he was interested and to which he gave of his best, come to full fruition. He will be greatly missed by all who knew him.

Professor J. J. R. Macleod, formerly professor of physiology and for ten years associate dean of this faculty, died suddenly and unexpectedly in Aberdeen in April last. During his Toronto period Professor Macleod gave unsparingly of his great ability and talents to this University, his colleagues, associates and students. He was devoted to the advancement of his own subject and at the same time was genuinely interested and active in promoting the welfare of the Faculty as a whole. No one during his time was more unselfish in efforts to improve the quality of the teaching, increase the facilities of the various departments or to collaborate in the solution of faculty problems. His early death is deeply regretted and he is sincerely mourned by his former colleagues in this Faculty.

(3) REPORT OF THE DEAN OF THE FACULTY OF APPLIED SCIENCE AND ENGINEERING

(C. H. Mitchell, C.B., C.M.G., C.E.)

The academic work in this Faculty during the session 1934-35 has been most satisfactory. The work of the staff and students alike has continued with the same high general standard that has been attained in recent years. Compared with several years ago, it has recently been noticed that the students have exhibited a more serious and earnest attitude toward their studies, doubtless due in part to the necessities which have been imposed by the long continued depression.

The annual examinations, held in January and April, have this year disclosed considerable diversity in results, when compared with former years. While

some of such inequalities have appeared in former sessions, there does not appear to be any marked reason or law to explain them.

It is well known in university circles that there are what are known as academically good and poor years. Apart from this, in the examination of records over a period of years, there are in this Faculty several noticeable features emerging. For instance, it is observed that the ratio of failures in the first year has again run high, having reached 27.7 per cent compared with 23.7 in 1934 and about 21 per cent in 1933 and 1932, 23.2 in 1931 and 19.3 in 1930. This is not accounted for by any of the usual methods of comparison. While examination standards have conscientiously been kept up, it is likely that the high percentage of failures in the first year this session has been due partly to a rigid adherence to the 50% pass mark recently adopted. This, however, does not seem to be the whole answer. It is possible that some of the increase may be due to less thorough preparation before coming up to the University, notwithstanding the strict application of entrance requirements.

It is observable, also, that the failures in the second year were much higher, indeed higher in percentage, than recorded in the past ten years. The figures in the past six years, for instance, are 26.5% in this session, 18% in 1934, 20.8% in 1933, 19.6% in 1932, 25.5% in 1931, and 19.3% in 1930. This sudden increase is probably due to a combination of circumstances, although not yet explainable in the usual or ordinary manner.

Student attendance in the Faculty continues to cause serious thought. With a registered attendance of 795 during the session just closed, it would appear that the number has continued to hold up through the prolonged depression in a manner that again attracts some attention.

The incoming numbers in the first year might be expected by this time to have materially fallen off. On the contrary, the number of 221 forming the first year is to be compared with 226 last year and 265 the year before. It thus appears that the recently decreasing number of students entering has naturally arrested itself, and there is some indication that the number coming into this Faculty may again be due for an increase as the depression lifts.

Were these figures the only index, they might not cause much thought, but the manner in which the incoming students distribute themselves into the various courses or departments is again causing some anxiety, for the same reasons as those to which attention was specially drawn in reports submitted the past three sessions. These distributions relate themselves to the question of departmental accommodation, to which specific attention has also frequently been called in these reports in recent years. It is noteworthy that there has been a marked increase in attendance in mining this past session; with the new building this need not cause apprehension, however, so far as accommodation is concerned. While the former increase in attendance in mechanical has now somewhat moderated, the accommodation difficulty recently reported is still quite acute.

It is in chemical engineering, however, that the attendance and accommodation problem continues, and has become even more acute. The total number of students registered in this department has steadily grown since the session 1930-31, with 174, to 186, to 210, to 225, and 238 in the session now closed. The accommodation and facilities available in this department are still quite inadequate and again the necessity for further accommodation must be emphasised. It is much to be hoped that the building programme discussed in recent years can now be revived in order to relieve this serious congestion. This is again pressed in the full belief that the field of chemical engineering is due for continued expansion to meet the growing demands in chemical industries in this country.

With respect to curriculum in this Faculty, there are various changes to report involved in the establishment of the new graduating department in engineering physics, this being the first year of its operation. It is as yet rather early to comment upon it, except to record that the heartiest co-operation has

marked the carrying on of the work by the various departments concerned in the two Faculties. The newly added courses of lectures in the school of architecture have also progressed with success.

Considerable comment has continued during the past year with regard to employment of engineering graduates and their absorption into the activities of the country. Notwithstanding the effects of the continued depression, it has been most gratifying to observe the revival of employment in this profession; in fact, the rate of revival has exceeded expectations. As has been previously stated, the engineering profession has been a barometer of national activities in various fields, and the re-absorption of applied science graduates, especially during the past two years, has been quite marked. It has been particularly gratifying to learn of the rapid absorption of the graduates of the session just closed, with a percentage considerably above that of the previous year. Certain fields, such as civil engineering and architecture, have already produced some agreeable surprises in this regard.

It is appropriate at this time to repeat the statement made on several occasions in these reports, that, as the country will continue to need applied science graduates in large numbers for some time to come, there ought not to be any discouragement for suitable students going into these university courses, provided they maintain a reasonable balance or ratio of distribution as between the various engineering fields, and do not unduly crowd into certain of them.

The School of Engineering Research has continued its work throughout the year, and it will be seen by the special report on research which accompanies this, that the fields of work have continued to be diverse and along lines which are expected to be of material practical use to the industries and the progress of the country. The school of engineering research has fortunately been enabled to continue its work, both by means of the financial provision of the greatly reduced amount and the utilisation of facilities and personal efforts of regular staff for which no appropriation has been available. It is praiseworthy that members of the staff of this Faculty so cheerfully and freely give their effort and time in this direction.

Particular attention should be drawn to the great success of the special research referred to in last year's report, with regard to improving the operation and control of large hydro electric power and transmission systems. The discoveries and applications derived from this, the result of several years' labour, were put into operation during the past year by the Hydro Electric Power Commission of Ontario. The success of the invention and application arising from this was so marked that in May of this year the author, Professor H. W. Price, professor of electrical engineering in this Faculty, was honoured by being selected for the presentation of the McCharles Prize, a valuable recognition which is given for distinction in scientific research, discovery, or invention of processes of benefit to Canada and applicable on a practical scale.

(4) REPORT OF THE DEAN OF THE ONTARIO COLLEGE OF EDUCATION

(Dr. J. G. Althouse)

The registration of the session 1934-35 was slightly lower than that of 1933-34. Inclusive of the extra-mural students, the total number registered in the courses for teachers was 930 in 1934-35 as against 949 in the previous session. Although the decrease in the whole registration appears small, there is a marked decrease in the High School Assistants' and Specialists' courses. This may be explained by the relative scarcity of teaching posts. The Pedagogy course and the Intermediate Household Science course show increased registration. In view of the limited accommodations and equipment of the College and of the surplus

of certificated teachers in the Province, a further decrease in 1935-36 is to be desired and expected.

During the session the department of educational research completed its series of standardised proficiency tests for the various Canadian school grades. The department also continued the examination of the methods of learning and teaching in languages other than the vernacular, and began a study of the financial support of schools in the province. Three bulletins were published by the department during the year.

The registration in the librarians' course was 54 and the demand for trained librarians for the public and special libraries of Ontario was relatively satisfactory. As noted in last year's Report, the increase in the number of candidates for librarians' certificates who are Bachelors in Arts and the continued need of special or advanced training, in addition to the standardised one-year course, will raise the question of university recognition of the courses in library science. Some universities on this continent recognise these courses as courses for graduate degrees under conditions that obtain with other graduate courses; other universities have instituted a special degree of Bachelor of Library Science. The demand for the institution of a degree in Library Science in the University of Toronto appears to be gaining ground.

The retirement of Dean Pakenham, at the close of last session, is the most serious loss the College has yet sustained. Since the establishment of the Faculty of Education in 1907, William Pakenham's direction has been the most important single factor in the improvement of secondary school teaching in the Province. The Department of Education and the University, the College and the schools, are all in his debt. His shrewd judgment of human nature, his insistence on high standards, his kindly tact and manifest fairness have combined with remarkable organising skill to establish public confidence in the professional training of teachers for our high schools. It was a task which called for a master craftsman, with all that the term implies of patience, skill, persistence and high purpose.

In January last, death dealt a heavy blow to the College staff by removing Professor W. E. Macpherson. As teacher and trainer of teachers, as editor and librarian, and as international authority on history of education, Professor Macpherson rendered unique service; as colleague and friend he is irreplaceable. His experience included appointments in many fields of education—high schools, collegiate institutes, technical schools and two universities. To all of these posts he brought high courage and sound scholarship, equalled only by his modesty and sane judgment.

(5) REPORT OF THE SECRETARY OF THE FACULTY OF HOUSEHOLD SCIENCE

(Professor C. C. Benson, Ph.D.)

The registration in this Faculty, as was expected, is again lower than last year. There were, in all, 45 students registered, and this number is more in keeping with the demand for young women trained as these graduates are. With the present arrangement for matriculation, it is, in fact, usually wiser for regular students to take the course in Household Economics in the Faculty of Arts, if they are wishing to do special work of this kind.

We have again, however, had a number of students who have come to us to obtain the degree, after a two years course at Macdonald Institute, and a few students who were otherwise admitted to obtain the degree with credits obtained elsewhere. The courses in this faculty make possible this arrangement, as the course in Household Economics cannot do.

We had a request during the session, for information in regard to Technical School graduates, who come to us, and we find that this faculty has continually

offered opportunity to such students. We have had from one to nine students from Technical Schools registered in the session and of late years some of them have done especially good work.

The results of the examinations have shown about the same proportion of failures but fewer conditions than in previous years; the first year record is better and the students from Macdonald have obtained very creditable standing.

(6) REPORT OF THE DEAN OF THE FACULTY OF FORESTRY

(*Dr. C. D. Howe*)

The outstanding event in the Faculty of Forestry during the current session was the appointment of Gordon Gunn Cosens to the position formerly occupied by the late Professor W. N. Millar. Professor Cosens was graduated from the Faculty of Forestry in 1923 and in 1927 he received the first master's degree conferred by the Faculty after two years study in the biological foundations of forestry. While an undergraduate he worked three summers for the Laurentide Company in Quebec and he continued with that company for five years after graduation being concerned chiefly with forest nursery and planting work. For the past six years he was Chief Forester and Assistant Woods Manager to the Spruce Falls Power and Paper Company at Kapuskasing, Ontario, where he participated in all phases of the work concerned with the production of more than 100,000 cords of pulpwood each year. It will be seen that Professor Cosens has a well rounded experience in forestry both in its theoretical and practical aspects, and this, reënforced by a natural talent for teaching, makes his appointment a fortunate one for the Faculty.

The business situation and the change in political conditions have worked out to the detriment of forestry employment all over the country and it has been particularly severe in this province. About twenty foresters have been dismissed from the Ontario Forestry Branch. The reduction of forestry staffs is in the long run a short sighted policy on the part of governments particularly and will eventually cost more in terms of increased forest depletion than saved by so called economy. Experience will undoubtedly demonstrate this and we may look forward to the gradual restoration of forestry to its proper place in state policy. Meanwhile the Forestry School must take steps to broaden its training of students so that they may have a wider field of employment after graduation. The most hopeful field for this at the present time lies in the pulp and paper industry The majortiy of the graduates employed in the past few years has been taken by this industry and the graduates as a whole are about equally divided in employment between private industry and governmental services of various kinds. Our graduates have been very successful in the pulp and paper industry and they have risen to positions of responsibility, some of them becoming woods managers. Men in such positions are the very best agents for the promotion of forestry since they will demonstrate not only to their employers but to the governments as well that forests can be utilised with profit without depletion of their growth-producing powers.

The present state of affairs in forestry employment therefore indicates that we must give our students a broader and more thorough training in practical woods work better to fit them for private employment. To this end we must have a practice area, owned by the University, and it should be a commercial forest so that the students can get experience in actual logging operations carried on by themselves. Logging by the students is entirely feasible now that we have a member of the staff who has had six years experience in logging operations. A properly selected area near a market could be made eventually to pay for itself. Another advantage in owning the property would be the security of the experimental work, permanent sample plots, regeneration studies, cutting

methods and so forth. Some of these in the past have been destroyed by a government leasing an experimental area to operators.

The area to be selected should be near enough to Toronto so that the students could be taken to it during week ends. We have already examined several areas with this object in view and hope to bring a definite proposition to you within the coming year.

Other plans involving a rearrangement of the course in order to extend the field of employment of our graduates will be discussed with you during the year.

(7) REPORT OF THE DEAN OF THE FACULTY OF MUSIC

(Sir Ernest MacMillan)

During the session 1934-35 the number of students registered was 35, in the course leading to the degree of Bachelor of Music; 8 registered in the first year, 13 in the second year and 14 in the third year.

The following lectures were given by members of the Faculty of Music:

H. A. FRICKER, ESQ., M.A., MUS. DOC.:
For Students of all years—
January— 4 "The Chorale of J. S. Bach".
January—11 "The Choral Preludes"—J. S. Bach.
January—18 "The Dream of Gerontius"—Elgar.
January—25 "The English Madrigal and the English Anthem".

H. WILLAN, ESQ., MUS. DOC.:
January— 7 "Strict Counterpoint". (All years)
January—14 "Free Counterpoint". (All years)
January—21 "Double Counterpoint and Canon". (Second and third years)
January—28 "Fugue". (Second and third years)

ERNEST MACMILLAN, ESQ., B.A., MUS. DOC.:
For Students of second and third years—
February— 1 "Orchestration".
February— 8 "Orchestration".
February—15 "Orchestration".
February—22 "Orchestration".

L. SMITH, ESQ., MUS. BAC.:
February— 4 "Suggestions in the teaching of harmony". (All years)
February—11 "Figured Bass". (First and second years)
February—18 "Modulation—on paper and at the Keyboard". (All years)
February—25 "Quartet writing". (Second and third years)

A series of organ recitals was given in Convocation Hall by leading organists of the city, including Mr. Charles Peaker, Mr. Frederick Silvester, Miss Murie Gidley, Mr. Richard Tattersall, Mr. Harvey Robb and Mr. Alfred Wilson. Dr. Willan, the University Organist, was unfortunately prevented from taking part in this series by an injury to his hand.

Bach's "St. Matthew Passion" was performed in Convocation Hall on April 2nd by the Conservatory Choir, which has also made two appearances with the Toronto Symphony Orchestra. The Conservatory Orchestra, under the direction of Mr. Ettore Mazzoleni, has made considerable progress this season, appearing with success in Convocation Hall and in Massey Hall.

An interesting series of chamber concerts has been given by the Conservatory String Quartet and a series of student concerts given by the Hart House Quartet in Convocation Hall has been enthusiastically supported by the student body.

A large number of student recitals has been given in the hall of the Conservatory. Original compositions by students were an important feature of some of these programmes.

The carillon recitals given by Mr. J. L. Richardson from the Memorial Tower during the summer months have maintained their popularity, and as usual, the Sunday evening and Friday afternoon concerts arranged by the Music Committee of Hart House have proved of great value in stimulating an interest in music among university students.

The number of candidates entering for the examinations of the Toronto Conservatory of Music for the present season has been 13,660 as compared with 13,799 for the season 1933-34 Entries for the year were distributed as follows: Piano, 6,680; Violin, 344; Singing, 277; Sight-Singing, 23; Organ, 17; Violoncello, 6; Viola, 3; Elocution, 28; Theory, Rudiments, History, Harmony, Counterpoint, Form) 6,282.

The Conservatory has sustained an irreparable loss through the death of Sir Albert E. Gooderham, who had been Chairman of the Board of Governors for eleven years. Sir Albert's kindly interest and wise counsel will be greatly missed.

(8) REPORT OF THE DEAN OF THE SCHOOL OF GRADUATE STUDIES

(Professor G. S. Brett)

During the academic year 1934-5 the number of students registered in the School of Graduate Studies was 614. In the previous year the number was 720: consequently the registration shows a reduction of 106 students. The reasons for variations in the numbers enrolled are not easily discovered: the incidence of the major changes is to some extent significant and throws some light on the probable factors which produce them. The reduction is most noticeable in the case of candidates for the M.A. where the number declined from 229 to 158, and in the case of candidates for the D.Paed. where the number declined from 106 to 85 These two items account for 94 out of the total reduction of 106. The decrease in the number of candidates for the M.A. is partly explained by the fact that during the first year of the course the applicants may be registered only as "graduate students" and this practice is becoming more common: but as the total number of "graduate students" is the same as last year (184) this affords no explanation of the actual reduction of numbers. The decision of a student to undertake graduate work is affected by (*a*) lack of employment, which makes further study the best use of time, (*b*) increased prospect of employment, calling for higher qualifications, (*c*) the cost of education. During the past year all these factors have been influential: the first two depend directly on the fluctuation of economic conditions the third is more exactly defined by the increased scale of fees. For many years the University of Toronto has offered all the facilities of a Graduate School at rates lower than those of any other institution; circumstances have made necessary a general increase of fees for all classes of students and the School of Graduate Studies has increased its fees in harmony with this general change. It still remains true that the fees are lower than elsewhere, but the increase may be expected to affect the enrolment to some extent.

In this connection it is necessary to repeat what has been said in former reports about the urgent need for funds to assist students. The number of scholarships available remains entirely inadequate. Opportunities for graduate work are afforded by staff appointments and in this way the number of students receiving financial help is greatly increased. On the other hand, the limitation of departmental expenditure and the reduction in the number of junior appointments is for the same reason a reduction in the resources of the School of Graduate Studies. The increase of fees is expected to provide funds of which a portion will be available for bursaries, but the probable amount to be received from this source will not make any significant change in the situation.

The number of students resident in the Province of Ontario was 465; of these 269 were from Toronto and 196 from other parts of the Province (the distribution

is shown elsewhere, p. 155). This shows that out of the total reduction of 106, Toronto accounted for 60 and other parts of the Province for 30. The number of students from other Provinces of Canada did not show any significant fluctuation. The distribution was as follows:—British Columbia 16; Alberta 8; Saskatchewan 17; Manitoba 18; Quebec 7; Prince Edward Island 3; New Brunswick 15; Nova Scotia 17. Similarly the number from other countries remained practically constant: the total was 48, including 25 from the United States, 9 from England, 2 from India, 1 from New Zealand, 2 from the British West Indies, 2 from Newfoundland, 1 from Denmark, 1 from Switzerland, 1 from Holland, 1 from Germany, 2 from Japan, 1 from Brazil. The number of institutions represented in the Graduate School was 57. Out of the total number registered 165 held Staff appointments (16 less than last year): 380 took their first degree in Toronto.

The distribution of the candidates for different degrees was as follows:—

	Men	Women	Total
Candidates for Ph.D.	124	21	145
Candidates for M.A.	96	62	158
Candidates for M.S.	6	...	6
Candidates for M.A.Sc.	11	...	11
Candidate for C.E.	1	...	1
Candidate for E.E.	1	...	1
Candidates for D.Paed.	77	8	85
Candidate for M.Sc.F.	1	...	1
Candidates for M.S.A.	13	...	13
Candidate for M.V.Sc.	1	...	1
Candidates for D.V.Sc.	4	...	4
Candidates for Mus. Doc.	4	...	4
Graduate Students	99	85	184
	438	176	614

The distribution of the candidates according to their major subject was as follows:—Anatomy 1; applied mathematics 6; anthropology 1; architecture 1; astronomy 3; biochemistry 12; biology 29; botany 23; chemistry 35; chemical engineering 8; civil engineering 2; classics 21; educational theory 4; electrical engineering 4; English 64; epidemiology and biometrics 2; food chemistry 3; forestry 1; geology and palaeontology 13; germanic languages 9; history 22; household science 2; law 18; mathematics 9; mechanical engineering 2; mineralogy 2; mining engineering 2; music 4; pathology and bacteriology 5; pathological chemistry 5; pedagogy 85; philosophy 47; physics 28; physiology 10; political science 23; preventive dentistry 1; psychiatry 1; psychology 44; romance languages 28; semitic languages 14; surgery 6; veterinary science 5.

The number of students recommended for degrees this year was as follows:—

Ph.D.	25
M.A.	90
M.S.	2
M.A.Sc.	7
E.E.	1
D.Paed.	3
M.S.A.	3
M.V.Sc.	1
D.V.Sc.	2

Fellowships:—For the Open Fellowships, four in number, fifty-two applications were received. The following awards were made:—

Miss E. L. Batho, B.A. McMaster (Brandon College); department of biochemistry.

F. M. C. Goodspeed, B.Sc. Manitoba; department of mathematics.

L. G. Turnbull, B.A., B.Sc. Mount Allison, M.A. Dalhousie; department of physics.

H. J. MacLean, B.Sc. New Brunswick; department of geology.

Appointments to other fellowships made by the Committee of the School were as follows:—

Alexander Mackenzie Fellowships:—
S. D. Clark, M.A. Saskatchewan; department of political science.
W. E. Ireland, B.A. British Columbia; department of history.
George Paxton Young Memorial Fellowship:—
D. A. Stewart, B.A. Dalhousie, M.A. Toronto.
Nipissing Mining Company Research Fellowship:—
W. E. Micklethwaite, B.A.Sc.

Appointments to other fellowships tenable in the School of Graduate Studies have been made as follows:—

War Memorial Fellowships:—
M. C. Cougle, B.A. New Brunswick.
C. E. Hall, B.Sc. Alberta.
Maurice Cody Fellowship:—
W. T. J. Easterbrook, B.A. Manitoba, M.A.
Leonard Fellowship:—
H. Noyes, B.A.

The following members of the School of Graduate Studies obtained scholarships or fellowships for advanced study in other institutions:—

Royal Society Fellowships:—
J. H. Creighton, M.A.
J. K. Thomas, B.A.

The Dean attended the annual meeting of the Association of American Universities held at the University of Chicago, October 1934.

(9) REPORT OF THE DEAN OF THE FACULTY OF DENTISTRY

(*Wallace Seccombe, D.D.S.*)

Considerable progress has been made in the science and practice of Dentistry during the past year. There has undoubtedly been a definite increase in the public appreciation of the importance of dental health service. The students are being trained in the clinic to have a better understanding of the dental application of the biological sciences, and the relation of oral pathological conditions to the general health. In addition to the problems of disease and repair, it is necessary that dental students be trained in restorative procedures, so that the proper mastication of food may obtain. A dental programme of education, with its contacts on the biological, medical and technical sides makes essential two years of college work and four years of dental studies, or its equivalent in this University of Honour Matriculation for entrance to a five-year course.

The Curriculum Survey Committee of the American Association of Dental Schools presented its report during the year. The result was a unanimous decision to recognise as Class A schools only those faculties which have adopted or will adopt this standard as a minimum requirement.

It is recognised, however, that further study should be given to methods of teaching, so that the curriculum which has been adopted as a guide to the schools, will be presented in the best possible way. The content of the course having been outlined, it is proposed within the next two years to complete an intensive study of the principles and the techniques of teaching which it is hoped will have the effect of further improving the effectiveness of dental education on this continent.

The Faculty has been visited during the year by a number of British dentists and there have been in attendance in the regular Fifth Year class six graduates

in Dentistry from Australia. These Britishers proved themselves most adaptable and friendships have been formed which further strengthen our kindly feelings toward our confreres from overseas. In addition to these students from outside Ontario, twenty registrants were from Western Canada and three from United States.

A definite attempt is being made to strengthen post-graduate study in the Faculty and with this in view it has been decided to hold six short post-graduate courses. These will be so planned that they may be of special value to graduates who desire to spend two weeks in refresher courses. The subjects that have been announced are essentially practical and include orthodontia, periodontology and radiodontia, operative dentistry, prosthetic dentistry, oral surgery and anaesthesia, and ceramics. Graduates of this University will be admitted to these courses for one-half the regular fee.

During the past session the post-graduate course in orthodontia was held early in March and those who attended found it most helpful. Seven graduates registered and of this number four were from American universities.

Results in the Training School for Dental Nurses have been quite satisfactory. Twenty-two young women were enrolled and definite progress was made both in the content of the curriculum and in improving the methods of training. This course of instruction has now been carried on continuously by the Faculty for sixteen years. There is a total of 291 graduates. For some years the classes were limited to about twenty-five but during the past few years, owing to prevailing conditions, to about twenty members.

We believe this School has made quite a worth-while contribution to public dental health service, in private dental practice, in school clinics and in various other public services.

In co-operation with the Board of Directors of the Royal College of Dental Surgeons of Ontario continued progress has been made in the holding of Extramural Lectures. Lecture-clinics were given in twenty-nine centres throughout the province of Ontario and eighteen members of the Faculty actively participated in these lectures. The dental profession greatly appreciates the Extramural Service.

It is gratifying to report a year of steady progress in this Faculty, which is due in large measure to the fine spirit of co-operation among the members of the staff.

(10) REPORT OF THE DIRECTOR OF THE SCHOOL OF HYGIENE

(J. G. FitzGerald, M.D., LL.D.)

In this annual report, the eighth since the opening of the School, there will be summarised some of the more important activities of the session 1934-1935.

In the report of last year the organisation of the School, its constituent departments and the relationship to the Connaught Laboratories, were indicated. It may be desirable to supplement this by stressing the fact that the School of Hygiene is not an adjunct of the Faculty of Medicine but an independent graduate school. It is however unique among such schools in that one department thereof is also a department of the Faculty of Medicine, namely, hygiene and preventive medicine. Furthermore, all the departments of the School of Hygiene are recognised by the School of Graduate Studies. This enables suitably qualified students to proceed to a higher degree therein. This is as it should be since the original scientific work done by such candidates is of the highest quality. It must also be reiterated that the provision of financial support for departmental research, and of special public health fellowships by the Connaught Laboratories, together with access to the very unusual facilities of the laboratories makes available for the School resources which are unexcelled. With the growth and

expansion of the scope of public health work in recent years it has become essential for the training of personnel for whole-time work in the field, that access should be had to all the health and social resources of the community in which the School is located. In this respect this School is exceptionally fortunate. Exceedingly cordial working relations with the Department of Health, Ontario, the Department of Public Health of the City of Toronto, as well as with a large number of voluntary health-promoting and social agencies have been established. It is not possible for a university School of Hygiene to function satisfactorily without resources of this kind. For purposes of investigation, demonstration and teaching alike, nothing less will satisfy the requirements of the situation. Fortunately, too, a School so related to the community may do much to assist in the development and extension of services which every enlightened province or municipality should possess. It is particularly desirable for the student of public health, both graduate and undergraduate, to have the opportunity of observing the influence not only of health hazards upon the general population but also of other environmental factors as well. This desideratum is constantly kept in view in this School. It is with deep appreciation that acknowledgment is made once again to those organisations and individuals who have assisted by permitting the attendance of students or giving personal service to the School in supervising observational visits of groups of graduates or undergraduates.

The enrolment of students, details of which appear hereunder, has again been very satisfactory. Candidates for the diploma in public health from the United States and from the Provinces of Alberta, British Columbia, Manitoba, New Brunswick and Ontario have been in attendance. Of these, four have been on Rockefeller Foundation fellowships provided through Provincial Health Departments and one through the School of Hygiene. Four fellowships have also been granted by Connaught Laboratories. Those receiving Rockefeller Foundation or Connaught Laboratories fellowships in public health are graduates in medicine. They are in all instances engaged in whole-time public health work. This may be academic or in the field as members of public health organisations. They are granted to those who, having been for some time so engaged, are in need of further training to equip them for new and greater responsibilities. A limited number of these fellowships are also granted to outstanding recent graduates for recruitment purposes.

An appointment to the Hastings Memorial Fellowship will be made early in the next session. This fellowship, it will be recalled, was established in 1929. It is a memorial to the life and work of the late Dr. Charles J. O. Hastings, Medical Officer of Health of Toronto from 1910 to 1929 and for many years a member of the Senate of this University. A sum of money was subscribed for this purpose in a campaign organised by the Canadian Social Hygiene Council. The value of the followship is fifteen hundred dollars. It is open to graduates in medicine of the University of Toronto and is awarded every three years. Nominations for this fellowship are made by the head of the department of hygiene and preventive medicine to the President of the University, appointments being made by the Board of Governors. The first holder of the fellowship, Dr. A. H. Sellers, is now a member of the department of epidemiology and biometrics.

A number of changes in personnel in the School took place at the close of the academic session 1933-1934. Miss O. E. Somerville, since 1927 Secretary of the School, resigned upon being appointed whole-time Librarian in the Connaught Laboratories. Dr. James Craigie has been appointed Secretary of the School of Hygiene as of July 1st, 1935. In the department of hygiene and preventive medicine Dr. M. H. Brown has been promoted to an assistant professorship. In physiological hygiene Dr. D. L. MacLean and Dr. E. W. McHenry have also been promoted to assistant professorships. The following have resigned:— Dr. C. E. Dolman as lecturer in hygiene (part-time); Miss G. Cowan, class

assistant in hygiene and preventive medicine; Miss M. G. Arnoldi, class assistant and secretary in the sub-department of chemistry in relation to hygiene.

Undergraduates registered in the fifth year in the Faculty of Medicine; in the Faculties of Arts and Household Science; as well as students in the School of Nursing have been given instruction in the School. A large amount of scientific work has engaged much of the time of the teaching staff. The details of this are presented in the report of the Director of the Connaught Laboratories. We have been privileged and happy to share with the Connaught Laboratories the entertainment of visitors from:—Australia, British Solomon Islands, Canada (Alberta, British Columbia, Manitoba, Ontario, Prince Edward Island, Quebec and Saskatchewan), China, England, France, Federated Malay States, Hong Kong, India, Jamaica, Panama, South Africa, Spain, Straits Settlement, United States of America (Alabama, California, Connecticut, Illinois, Iowa, Massachusetts, Michigan, Missouri, New York, Ohio, Pennsylvania, Tennessee, Texas, Virginia, and Washington, D.C.).

SUMMARY OF STUDENTS RECEIVING INSTRUCTION IN THE SCHOOL OF HYGIENE
SESSION 1934-1935

A.	Graduates:	
	Candidates for the Diploma in Public Health	12
	Candidates for the degree of Ph.D.	1
	Occasional students	5
B.	School of Nursing	47
C.	Undergraduates:	
	Faculty of Medicine, fifth year	131
	Faculty of Household Science, third and fourth years	21
	Faculty of Arts, third year	48
	Department of University Extension	31
		296

(11) REPORT OF THE LIBRARIAN

(W. S. Wallace, Esq., M.A.)

I beg to submit the following report on the work of the University Library for the year ending June 30, 1935:

The number of volumes added to the Library during the year has been 15,560, and the number of pamphlets 4,446, making a total number of accessioned volumes in the Library 316,704, and the total number of pamphlets 118,599—or a grand total of 435,303 items. It should be explained, however, that this total does not include a large number of unbound government documents and other materials which, in the earlier days of the Library, were not accessioned. It is clear that the number of separate items in the Library is now approaching the half-million mark.

The following are the statistics of the use of the Library by undergraduates, in comparison with previous years:

	1921-22	1926-27	1933-34	1934-35
Reading-room books	41,928	106,485	170,334	186,605
Overnight books	18,998	39,779	95,506	107,559
Week books	4,782	13,104	23,918	23,377
Totals	65,718	159,278	289,758	317,541

This represents an increase during the year of 27,783 books handled, or an increase of nearly ten per cent. At the professors' and graduates' register there has been a slight decrease, accounted for possibly by the fact that there has been a drop in the registration in the School of Graduate Studies.

I append herewith a statement showing the total circulation in the Library during recent years:

Total circulation	1926-27	1930-31	1933-34	1934-45
To undergraduates	159,278	231,759	289,758	317,541
To professors and graduates	20,000	37,388	42,192	40,843
Totals	179,278	269,147	331,950	358,384

These figures are exclusive of books taken for consultation from the reference shelves, of which approximately 20,000 have been replaced on the shelves by the Library assistants during the year, but are inclusive of interlibrary loans. Of these, the same number have been handled during 1934-35 as were handled the previous year, namely 752, of which 423 were books lent by the University Library, and 329 were books borrowed.

I have to report that during the past year the new Law Reading Room has been put into operation, and the books and periodicals in law transferred to it. This reading room, like the medical reading room, with its specialised service has already proved a great success. I have to report also that the University College reading room has been increasingly patronised, and has shown an increase in circulation of over twenty per cent. I append a statement showing the circulation in the medical, political science, University College, and law reading rooms:

Medical reading-room:	Reading-room books	10,761
	Over-night books	11,386
	Week books	3,606
		25,753
University College:	Reading-room books	33,325
	Over-night books	17,943
		51,268
Political Science:	Reading-room books	12,567
	Over-night books	6,890
		19,457
Law reading-room:	Reading-room books	8,822
	Over-night books	2,870
	Week books	251
		11,943

The wear and tear on books caused by this rapidly mounting circulation continues to be a serious problem. During the past year the binding and mending department has prepared for binding 3059 volumes, has mended 2140 volumes, and has put into pamphlet binders or boards 1021 volumes.

During the past year the Library has received several notable gifts and bequests. In addition to the law library of the late Mr. Justice Armour, which I reported last year, the Library has received from Mrs. Wallace Nesbitt the gift of the very valuable law library belonging to her late husband, the Hon. Wallace Nesbitt, K.C. The addition of these two libraries has done much to bring the law collection of the library up to a standard hardly contemplated several years ago. I have also to report that the library of the late Mr. Frank Darling, which under the terms of Mr. Darling's Will was to remain in the possession of his partner, Mr. John Pearson, during the latter's life-time or until he wished to turn it over to the University, has now been handed over by Mr. Pearson to the Library, and is being transferred to the departmental library in architecture. Finally, I have to report the gift of a valuable collection of rare French books by an anonymous donor, the collection to be known as "Collection G.M.A."

During the past year there was raised in the Library Committee the question of the principles on which the appropriations were made for the purchase of books and periodicals in various subjects, and a sub-committee was appointed

to make recommendations in regard to the method of making the library appropriations. This sub-committee brought in a report which was unanimously adopted by the Library Committee, and which runs as follows:

> "Your committee begs to report that it can discover no satisfactory basis for the allocation of appropriations for the purchase of books and periodicals in the Library other than that of experience; and it begs therefore to recommend that the appropriations should remain for the present substantially the same, but should be amended from time to time on recommendation of the Librarian, as experience dictates. It is recommended, however, that in making the appropriations the unit system of $100 should be used, similar to that in use in the University of Michigan.
>
> "Your sub-committee recommends further in the strongest manner that application should be made to the Board of Governors for an increased appropriation for the Library, and that this increase should be used to strengthen the general fund in the hands of the Librarian, on the understanding that the Librarian would be able to supplement the funds for special subjects as need arose, and on this understanding also that he could transfer to the general fund periodicals of vital interest to two or more departments."

A problem that has become acute during the past year has been the cost of German periodicals and continuations. This cost has been due to the rapacity of certain German publishers who have raised the price of scientific periodicals to a point several times greater than the cost of similar periodicals in other countries, and this has been aggravated by the unfavourable exchange situation between the Canadian dollar and the German gold-mark. The result has been that in certain scientific subjects the total appropriation has been virtually exhausted in paying for periodicals and continuations, and almost nothing has been left for the purchase of monographs. Last year the Library Committee tried to meet this situation by placing an appropriation in the hands of the Librarian to enable him to come to the relief of departments which were specially affected by the unfortunate foreign exchange. But it has now become necessary to take more drastic action, and I am able to report that I have succeeded in obtaining the consent and approval of a number of departments in cancelling our subscriptions to a number of German scientific publications, the cost of which seem wholly out of line with their value.

Once more I wish to bring to your attention the faithful and loyal service of my assistants in the University Library. I am very proud of the way in which, under the increasingly difficult and congested conditions in the University Library, they have, from the most senior to the most junior, carried on. The cheerfulness with which, even when hard pressed, they assume additional responsibilities, is remarkable. One instance will suffice: For the past few years the valuable *Canadian catalogue of books* published annually by the Toronto Public Library has lacked a list of books published in French in Canada. When I suggested to the members of the Order Department in the Library that I should like to offer to supply the Toronto Public Library with a catalogue of the Canadian books published during the year in French (since we have a fund for the purchase of this type of material), they fell in with my suggestion with enthusiasm. They have carried through a bibliography of French-Canadian books published during the past three or four years, while at the same time they have borne a heavier burden of routine work than at any previous time in the Library's history.

(12) REPORT ON RESEARCH

Anatomy, under direction of Professor J. C. Boileau Grant

Dr. H. Book by preparing serial sections of an injected human kidney and measuring enlarged drawings of the capillaries in a typical glomerulus was able to measure the secreting surface. The result, 0.477 of a square meter, is thought to be a more accurate determination than any obtained by previous attempts along this line. Dr. Book is studying by means of micro-dissection the structures in the wall of the lung alveolus. His purpose is to differentiate between reticular fibres and cement substance—a point of decided importance in determining whether the alveolus does or does not possess an epithelial lining.

Dr. Book and Dr. Ham are studying the early changes that occur in the skin and subcutaneous tissues of the mouse, when the skin is painted with a potent cancer producing substance (dibenzanthracene).

Dr. H. A. Cates has completed a survey of the anthropometry of the twelve day old baby, and has sent a paper on the subject for publication. This work involved the taking of measurements of 700 babies. It began under a grant from the Banting Foundation and received the active co-operation of the department of obstetrics. Dr. Cates has set up in Dr. Edith Gordon's department the necessary apparatus to determine the position of the centre of gravity of the body in the female. This work, which is well under way, is with the object of relating the centre of gravity to the shoulder, hip, knee and ankle joints. The survey is to supplement in the female the work already done on the male. In conjunction with Dr. George he has completed a survey on sixty male students to determine the exact position of the scapula in space.

Mr. H. C. Elliott, Richardson fellow during the session 1933-34 and 1934-35, has completed and has submitted as a thesis for the degree of Master of Arts his study of the histogenesis of articular cartilage. His work seems finally to shew that mitosis is the normal mechanism of cell division in immature articular cartilage; that mitosis becomes rarer as maturity is approached, and that it finally gives way to amitosis. This is an observation of great importance.

Dr. Ruggles George has investigated and published reports on "Bipartite Patellae" and on the "Topography of the Abdominal Aorta." He has a number of other investigations on hand.

Dr. B. L. Guyatt has designed for the museum a display table in which each specimen rotates so as to be viewed from all sides. With Mr. E. M. Davidson he has devised a novel and simple method of painting with coloured sealing-wax specimens that are to be kept under fluid.

Dr. A. W. Ham continued his studies on the proliferative and degenerative lesions that develop in the intima of the coronary artery (rat) several months after the administration of a single massive dose of activated ergosterol. He is repeating the preliminary work.

Dr. A. W. Ham in collaboration with Dr. Marrian of the department of biochemistry is studying the effect of large doses of oestrin on the tissues of the mouse, in an attempt to learn something of the mechanism by which this hormone is able to produce such astounding cell proliferation in certain tissues. He is also investigating the mode of development of the alveolus of the lung.

Mr. H. E. LeMasurier has perfected "A simple method of staining macroscopic brain sections," and has a paper on this subject in the press.

Dr. W. H. Piersol, with the collaboration of Mr. H. E. LeMasurier, is investigating the histological differences between the incubator hatched chick and the chick hatched under a hen. This is being done at the request of Dr. W. R. Graham and Dr. H. Branion of the Ontario Agricultural College, Guelph, with the purpose of accounting for the subnormal vitality of the incubator hatched chick. Dr. Piersol is also reconstructing a model x 125 of a human embryo of two fully formed somites, from a specimen presented by Dr. C. V. Greaves.

Dr. James C. Watt, with the assistance of Dr. A. N. McKillop, has completed an investigation of the relations of the arteries in the posterior cranial fossa to the roots of the cerebral nerves; and has published a paper embodying this work. Dr. Watt has in progress a larger study of the arrangement and variations of these same arteries. He is also gathering information on the arrangement of the cranial venous sinuses.

Dr. J. C. B. Grant, under a grant from the National Research Council of the United States of America, continued his field work in anthropometry among the Indians of Athapascan stock; this summer he visited particularly the Slave, Dogrib, Yellow-knife and Chipewyan Indians. The success of this year's expedition owed much to the marked kindness of Dr. C. Le Bourget, the Indian Agent at Fort Resolution on Great Slave Lake. More than 300 Indians were examined and their blood grouped. The very high percentage of group A present among the Slave and Dogrib Indians was unexpected.

For a number of years Dr. Grant has been investigating the incidence of duodenal diverticula at different age periods, and has in the press a paper encorporating his findings.

Biochemistry, under direction of Professor H. Wasteneys

Directed by Professor Wasteneys.

Mr. B. F. Crocker has continued his work on the perfection of the method of isolating intestinal contents of dogs in order to carry out researches into the extent of digestion in different situations of the mammalian intestinal tract and under varying conditions. A satisfactory operation has been devised, and an analysis of digested material is now under way.

Miss Marion Lawson who has been again aided by a grant from the Banting Research Foundation, has concluded her investigation into the carbohydrate metabolism of the rabbit's kidney and has been able to show that it is identical with that of cardiac and brain tissue. She has embodied the results of this research in a thesis which was submitted for the degree of Doctor of Philosophy.

Dr. V. Ignatieff has continued his investigations into the role of phosphorus in plant metabolism by following the phosphatase content of the tissues at different stages of growth. The highest concentrations of phosphatase were found in the leaves and the rapidly growing parts of the plant whereas in the root, the concentration of the enzyme was comparatively very low. On the basis of these experimental results and the results of other investigators, a hypothesis is put forward that phosphatase in the higher plants plays a role in the metabolism of carbohydrates.

Dr. R. D. H. Heard, under a grant from the Banting Research Foundation, has continued his work on the synthesis of d.l. β-3.4 dihydroxyphenyl N. dimethyl alanine.

In collaboration with Dr. Young of University College he has investigated the reducing substance of brain and spinal cord.

Directed by Professor G. F. Marrian.

In collaboration with Mr. D. Beall the constitution of equol, which was previously isolated from horses urine, has been investigated. It has been shown to be 7-hydroxy-2(4′-hydroxyphenyl) chromane or 7 hydroxy-3(4′-hydroxyphenyl) chromane or 6 hydroxy-2(4′-hydroxybenzyl) coumarane.

Mr. D. Beall has continued his work on the isolation of oestrogenic hormones from pregnant mares' urine by means of the "mercury" process mentioned in last year's report. The hormones have now been isolated in greater yields and in a high state of purity. Several new non-oestrogenic compounds have been isolated and work on their constitutions will be shortly commenced.

Mr. S. Cohen has made a quantitative study of the excretion of oestrin in its different forms throughout pregnancy in the human. It has been shown that

labour is preceded and accompanied by a conversion of physiologically inactive "oestrin esters" into the active "free" forms. It is thought that this may be one of the events which initiate labour.

Mr. Cohen is now attempting to isolate in a state of purity the oestriol esters in human urine. He has devised several new methods of fractionation and has obtained highly concentrated extracts.

Dr. Watson of the department of obstetrics and gynaecology has collaborated in all the work in which human material has been used.

Dr. R. D. Heard and Dr. S. Weinstein, aided by a grant from the Banting Research Foundation, have been engaged in the assay and purification of the oestrus inducing, gonadotropic substance of pregnancy urine. They have devised a sensitive, inexpensive and comparatively quick method of assay, and considerable progress has been made in the concentration and purification of the substance.

Directed by Professor A. M. Wynne.

Dr. L. Farber has investigated the ability of certain bacteria to break down and utilise whole proteins; the nature and properties of the enzymes concerned and the conditions influencing their production and activity have also been studied.

Mr. M. Freed has investigated the synthetic action of pancreatic lipase with a view toward the determination of the conditions affecting the relative proportions of the mono-, di- and tri-glycerides synthesised. Several such factors have been studied.

Mr. R. C. P. French has concluded his study of cereal lipases. The results of this and previous investigations have been embodied in a thesis for the degree of Ph.D. After completing his work in this department Mr. French accepted, last summer, a research position in the Connaught Laboratories.

Mr. L. Rabinowitch has studied certain factors affecting the rate of hydrolysis of fats by pancreatic lipase. The possible existence of a specific coenzyme which other investigators have recently stated to be necessary for the activity of this enzyme has been examined. The experimental results indicate that no such coenzyme exists and that coenzyme-like effects are entirely due to regulations of hydrogen ion concentration. The effects of several oxidising and reducing agents on the hydrolytic activity of the enzyme were investigated. Further studies of the influence of substrate concentration on the rate of hydrolysis of the triglycerides of the lower fatty acids were made.

Dr. A. M. Wynne has studied the reducing properties of certain fermenting bacteria, more particularly from the point of view of their ability to reduce the lower fatty acids.

Biology, under direction of Professor E. M. Walker

The following summary includes investigations in progress, published, or in course of publication, for the year 1934-35:

Vertebrate Anatomy

By Professor W. H. T. Baillie—Muscle relations in head region of mammals; studies on relation of pigment to sensitive areas.

Under direction of Professor W. H. T. Baillie:

C. R. Gadaire—Enamel organ and associated structures from the standpoint of developmental mechanics.

C. K. Gunn—A study of the origin and distribution of pigment in mammalian skin resulting from natural and artificial causes.

Invertebrate Zoology (including Entomology and Parasitology)

By Professor Norma Ford—Behaviour of the parasitic sarcophagid fly, *Wohlfahrtia vigil.*

By Dr. F. P. Ide—Partial survey of aquatic insects of the Credit River, Ont.; Studies of Ontario Ephemeroptera (mayflies).

By Professor E. M. Walker—Thoracic skeleton and musculature of *Grylloblatta;* diagnostic characters of larval stages of *Wohlfahrtia vigil;* nymphs of Canadian Odonata.

Under direction of Professor E. M. Walker:

C. E. Atwood—Effect of different foods and of starvation on longevity, size, reproductive capacity and sex ratio in certain insects of economic importance (Lepidoptera and Hymenoptera).

Miss A. Chorolsky—Initial steps in the embryological study of orthopterous insects.

A. M. Fallis—Experimental and life history studies on the trematode *Echinostomum revolutum.*

Miss J. Fraser—Taxonomic and life history studies of Ontario Trichoptera.

T. N. Freeman—Comparative studies of the male genitalia of the North American Lycaenidae.

Miss J. F. L. Hart—Diagnostic characters of immature stages of Pacific Coast Anomura (Crustacea).

Mrs. E. Kuitunen-Ekbaum—Life history of *Philometra americana*, a nematode parasite of the starry flounder (*Platichthys stellatus*); taxonomic and life history studies of various cestode and acanthocephalan parasites of fishes.

E. H. Marchant—Preliminary studies towards an investigation of the nematode fauna of the soil.

Marine Biology

By Professor A. G. Huntsman—Sea life and general life history of Atlantic salmon.

Under direction of Professor A. G. Huntsman:

W. H. Johnson—Food and feeding of the herring.

H. M. Rogers—Fauna and conditions of the estuary of the Saint John river, N.B.

Geo. C. Whiteley, Jr.—Growth and fluctuations in abundance of the cod of Newfoundland.

Vertebrate Embryology

By Professor A. F. Coventry—Collection and preparation of material for a study of a comparative series of embryos and placentae of small rodents.

Animal Ecology, Mammalogy and Ichthyology

By Professor A. F. Coventry—Study of the small mammal population of Temagami.

By Professor J. R. Dymond—Taxonomy and ecology of Lake Nipissing fishes; taxonomic and distributional studies of Canadian Salmonoids; life history and relative growth studies of the bat, *Myotis l. lucifugus.*

Under direction of Professor J. R. Dymond:

C. H. D. Clarke—Periodic fluctuations in the numbers of ruffed grouse, *Bonasa umbellus.*

F. E. J. Fry—Movements and general life history studies of ciscoes (*Leucichthys artedi*) in Lake Nipissing.

D. A. MacLulich—Periodic fluctuations in the numbers of varying hare, *Lepus americanus.*

E. S. Pentland—Bacteriological and pathological studies of varying hare, *Lepus americanus.*

J. M. Speirs—Migration studies of birds at Toronto.

W. R. Whittaker—Growth studies of the pilchard, *Sardina caeruleus.*

Genetics

By Professor J. W. MacArthur—Species and variety crosses of the tomato:—summary of chromosome mapping to date; analysis of size inheritance by linkage and growth studies; development of a new commercial variety completely immune to brown mould (with A. N. Langford, Vineland Station).

Poultry breed genetics (with Professor W. R. Graham, O.A. College).

Human heredity of dystrophy of hair and nails in a Quebec family (with Dr. Maurice Hobbs of St. Johns).

Under direction of Professor J. W. MacArthur:

F. Jerome—Quantitative studies of hybrid vigour in breed crosses in fowls.

Prof. E. S. Snider (O.A.C.)—Selection and genetics of high- and low-hatching strains of poultry.

C. K. Gunn—Genetics of disease resistance in rodents.

Miss V. E. Engelbert—Cytogenetic studies with tomato mutants and *Poa* species.

Mrs. M. E. Richardson—Role of heredity in families with mentally deficient children.

Comparative Neurology

By Professor E. H. Craigie—Further study of the cerebral cortex and related pallial structures of the emu and kiwi; examination of the corresponding parts in the cassowary; preparation of brains of ostrich and various reptiles for comparative study; study of mossy fibres in the cerebellar cortex of aquatic vertebrates.

Under direction of Professor E. H. Craigie:

C. G. Smith—Postnatal growth changes in olfactory bulbs of albino rat; study of the causes of diminution in size which was found in the bulbs in old age, and which is probably a pathological condition.

Miss H. M. Stevens—Quantitative study of the vascularity of the various lobes of the hypophysis in the cat.

Limnology

Under direction of Professor W. J. K. Harkness:

C. Carl—Changes in the flora and fauna accompanying the transition from salt to fresh water in a lagoon that had been cut off from the sea in Stanley Park, Vancouver, B.C.

D. Chitty—Ecological conditions of a marginal swamp, including plant succession and relation of plants to micro- and macrofauna of the water; spawning of gar-pike (*Lepisosteus*) and bowfin (*Amia*) in Lake Erie.

J. M. B. Corkill—Physical and chemical conditions of Lake Nipissing, special attention being given to the factors controlling the oxygen supply of lake water.

K. D. Doan—Winter habitats of fishes in streams near Toronto; food of small fishes; preliminary work on the investigation of the bass in Lake St. Clair and Rondeau Bay (this study is being conducted by the Fisheries Laboratory in conjunction with, and by the financial support of, the Provincial Department of Game and Fisheries.

F. E. J. Fry—Variations in the ciscoes of Lake Nipissing, correlation of variations with type of habitat, movements of the fish and temperature at which eggs develop; an apparatus devised for the study of the rate of growth of fish.

R. R. Langford—Studies on the plankton of Lake Nipissing, its horizontal, vertical and seasonal distribution throughout the lake; its diurnal movements; and the efficiency of various methods of quantitative plankton collection.

J. P. Oughton—Bottom fauna of lakes and streams.
W. E. Ricker—Food chains and factors limiting the production of sockeye salmon in Cultus Lake, B.C.

Experimental Biology

By Professor Lawrence Irving—Control of blood pressure in the dog-fish by sensory impulses passing along the glossopharyngeal and vagus nerves (in collaboration with Dr. D. Y. Solandt and Mr. O. M. Solandt); adjustment of seals to diving, a study of the salt excretion, respiratory function of the blood, metabolism and control of respiration and circulation (in collaboration with Mr. K. C. Fisher, Dr. D. Y. Solandt, Mr O. M. Solandt, Miss Jean F. Manery and Mrs. M. S. Welsh); action of CN and CO as respiratory poisons on the embryonic heart of fish; electrolyte balance in developing eggs and tissues (with Miss J. F. Manery); measurement of blood flow in tissues by means of a resistance thermometer (with Mr. K. C. Fisher); oxidation processes in the liver by the Warburg technique (with Mrs. M. S. Welch, assisted by the Banting Research Foundation); preparation and study of the enzyme carbonic anhydrase with a view to its relation to calcium carbonate formation and hence to that of bone (with Miss K. M. Robertson, assisted by the Banting Research Foundation).

Taxonomy and Distribution

The following studies, chiefly taxonomic and faunistic, have been carried on during the past year by the staff of the Royal Ontario Museum of Zoology:

J. L. Baillie—Records of birds breeding in Ontario.
E. C. Cross—Studies of Ontario weasels.
T. B. Kurata—Spiders of Ontario.
E. B. S. Logier—Amphibians and reptiles of Ontario.
E G. McDougall—The present range of deer, moose and caribou in Ontario.
J. P. Oughton—Unionidae of Ontario.
T. M. Shortt—Baird's sparrow.
L. L. Snyder—The northern sharp-tailed grouse, with description of a new race.

Botany, under direction of Professor R. B. Thomson

Phanerogamic Botany, Genetics and Plant Breeding

Anatomy and Experimental Morphology

Baldwin, W. K. W.—The organisation of the young sporophyte of *Ophioglossum* and *Botrychium*.
Bannan, M. W.—Work on the wood of conifers:
Chemical structure of the cell wall of the cambium.
The character of vestigial cells in the rays.
A comparative study of the development, distribution and character of the resin ducts.
Hull, Miss K. L., & Thomson, R. B.—The structure of the sporophyte of *Lycopodium* and *Selaginella*.
Roscoe, Miss M. K.—Studies of vessels in the Birch.
Taylor, T. M. C.—The sporeling organisation and the cladorhize development of the adult plant in *Equisetum arvense* L.
Thomson, R. B.—The organisation of the sporeling of *Osmunda*.
Thomson, R. B., & Bannan, M. W.—The stimulation of resin production by chemical means.
Thomson, R. B., & Hull, Miss K. L.—The organisation of the lower vascular plants.
Modification of the form of the embryo in Cycads, Ginkgo and conifers on development in culture fluid.

Wright, Miss J. G.—The nature of the pit-closing membrane in the higher gymnosperms.

Taxonomy

Krotkov, P.—Plant survey work in the Bruce Peninsula; revision of the herbarium material; special study of Ontario willows and golden rods.

Taylor, T. M. C.—The moss flora of Ontario and the distribution of Ontario Pteridophyta.
A study of the genus *Betula*.
Plant survey work in the Algoma District.

Genetics

Thomson, R. B., & Miss J. G. Wright—A study of abnormal types of *Linaria vulgaris* and their heredity.

Mycology, Forest Pathology and Cryptogamic Botany

(Under the direction of Professor H. S. Jackson)

Bier, J. E.—A study of the Hypoxylon canker and other canker producing fungi attacking *Populus*.

Biggs, Miss R. P.—A cultural study of Thelephoraceae.

Brodie, H. J. (National Research Council (U.S.A.) Fellowship)—A study of the phenomenon of aversion (Barrage) in *Lenzites betulina*.

Cain, R. F.—A taxonomic study of Ontario Sordariaceae and related Sphaeriales.

Dearness, John—With the co-operation of the Department of Botany, Dr. John Dearness, of London, Ontario, is preparing an annotated list of the fungi known to occur in Ontario.

Groves, J. W.—Cultural studies of certain canker forming species of *Dermatea Pezicula*, *Godronia* and related forms.

Jackson, H. S.—A study of the rusts of Panama and Costa Rica.
The mycological flora of the Toronto region and of the Temagami Forest Reserve.
A cytological study of *Herpobasidium filicinum*.

Lehmann, A. J. V.—A study of the nuclear phenomena of the germination of the teliospores of certain species of *Lepto-Puccinia*.

Macrae, Miss R.—A study of phosphorescence in *Panus stipticus*.

Nobles, Miss M. K.—A cultural study of certain resupinate Hydnaceae and Thelephoraceae. (Ready for publication in part).

Plant Ecology and Seed Studies

(Under the direction of Professor H. B. Sifton)

Structural Ecology

Cormack, R. G. H.—A microchemical and experimental investigation of the development of root hairs.

McPherson, D. C.—On the structure, form and development of air-spaces in roots.

Sifton, H. B.—On the development of the leaves of Labrador Tea.

Seed Studies

Hamly, D. H. —Further investigations on the seed coats of Legumes.
Physiology of germination in Wheat.

Leggatt, C. W.—Investigation of dormancy in Wild Oats and in Lettuce seed.
Investigation of certain mathematical aspects of seed analysis.

McGugan, Miss J. E.—The seed-coats of the genus *Brassica*.
The occurrence of certain characteristic pigments in the cotyledons of *Brassica* species and varieties, and their value in seed identification.
Identification of *Brassica* seedlings.

Sifton, H. B.—Investigation of the effect of alternating temperatures and light on seed germination.

Plant Physiology

(Under the direction of Professor G. H. Duff)

Brodie, Miss A. B.—The metabolism of nitrogen and its relation to respiratory metabolism. A study of cellular metabolism with especial reference to the behaviour with advancing starvation of the proteins and their derivatives. The work is in its initial stages.

Duff, G. H—Sugar degradation and respiratory metabolism. A study of metabolic mechanics in the plant cell, with especial reference to the rôle of cane sugar.
The metabolic gradient of the wheat leaf, its relation to sugar concentration and its modification after isolation. A newly-instituted study of the mechanism of cellular respiration and of inter-cellular transport.

Losee, S. T. B.—Anaerobic respiration in the wheat leaf. A new investigation of the mechanism of glycolysis and its activity in various physiological states.

Tomalin, F. E. M.—The influence of age upon the sugar-respiration relation. A study of metabolic mechanics in juvenile and senile states of the cell for comparison with those established for the state of maturity.

Plant Pathology

(Under the direction of Professor D. L. Bailey)

Bailey, D. L.—Dead Arm Disease of Grape—in co-operation with Vineland Experiment Station.
Diseases of Ornamentals.
(*a*) Cytospora disease of Koster's Blue Spruce.
(*b*) Suspected virus diseases of lilies and gladiolus.
These projects are being continued at the Vineland Experiment Station.

Fitzpatrick, R. E.—A continuation of studies dealing with the stimuli initiating the hypertrophies caused by parasitic fungi and with the manner in which different environmental factors modify the normal development of *Taphrina* species and of *Ustilago zeae* within their host tissues after infection has taken place under optimum conditions for the parasite.

Langford, A. N.—Cladosporium Leaf Mold of Tomato—in co-operation with Prof. J. W. MacArthur, Department of Biology, U. of T. A study of the genetics and pathology of *Cladosporium fulvum*.

Putnam, D. F.—Virus diseases of Potato. The results to date of this investigation, which has dealt especially with an analysis of the virus diseases of the variety President as it occurs in Nova Scotia, were brought together in a thesis entitled, "Comparative studies in potato virus diseases", which was submitted to the graduate school in partial fulfilment of the requirements for the Ph.D. degree this May.

Truscott, J. H. L.—Strawberry Root Rot project continued in co-operation with the Vineland Experiment Station.
London Celery problem—begun in co-operation with the Ontario Agricultural College.

Chemistry, under direction of Professor W. Lash Miller

Thirty-six students were engaged in research during the past winter under the direction of professors of the department of chemistry. The degree of Master of Arts was conferred on eight of these viz:—Messrs. M. Cohen, L. H. Cragg, A. A. Janis, L. F. King, J. B. Lavere, Miss C. J. Sanderson, Miss M. C. Scott, and Mr. W. F. Weston; also on Mr. M. L. Graham who worked under Dr. E. W. McHenry, and Mr. K. K. Kay who worked under Professor C. H. Best (both in the Connaught laboratories), and on Mr. M. L. Staples who worked under Dr. A. E. R. Westman in the laboratories of the Ontario Research Foundation.

The degree of Master of Science in Agriculture was conferred on Mr. F. R. Graesser, who worked in the laboratories of the Ontario Agricultural College under the direction of Professor R. Harcourt.

The degree of Doctor of Philosophy was conferred on Mr. H. A. Showalter, whose work on the solubility of carbon-dioxide in various solvents was carried out under the direction of Professor J. B. Ferguson.

The following were the subjects of research:—

H. Bernstein—Raman effect in electrolytes
J. J. Chechack, M.A.—Quaternary bases, analogues of chinoline
M. Cohen, M.A.—Adsorption of water-vapour on glass
A. F. W. Cole, M.A.—Diffusion of copper sulphate in sulphuric acid solutions
H. L. Collins, M.A.—Spectroscopic analysis of osmium and ruthenium
L. H. Cragg, B.A.—The sour taste of acids
Miss M. L. Elder, M.A.—The fourth constituent of bios
G. W. Graham—The reduction of nitro-anthracene by electrolysis
D. L. Griffith, M.A.—Estimation of palladium and platinum
A. H. Heatley, M.A.—Potential distribution in carbon arcs
A. A. Janis, B.A.—A static method of determining vapour-pressure lowering
L. F. King, B.A.—The rate of reaction of alcohols on esters
J. B. Lavere, B.A.—Ring closure in 4-acenaphthoyl-benzoic acid
D. J. LeRoy—Diffusion of copper sulphate in presence of sulphuric acid
T. MacHattie—Overvoltage during electrolysis
Miss M. A. McQuhae, M.A.—Separation of solids of different densities
C. Marchant—Preparation of the constituents of bios from tomato-juice
J. C. Morgan, M.A.—Overvoltage during electrolysis
A. C. Morris, M.A.—Vapour-pressures and partial pressures
J. R. Patton, M.A.—Base exchange with artificial silicates
A. Pype—Hydrolysis of casein and gluten in dilute acids
R. G. Romans, M.A.—Photochemical change of trans to cis di-p-toluyl-ethylene
J. J. Russell—Microanalysis of osmium and ruthenium
Miss C. J. Sanderson, B.A.—Effect of amino-acids etc. on the yeast-crop
Miss M. C. Scott, B.A.—Microdetermination of platinum and palladium
H. A. Showalter, M.A.—Solubility of carbon-dioxide in various solvents
A. J. Skey—Calorimetric technique (cold junctions)
R. S. Soanes—Potential distribution in carbon arcs
J. J. Tansey, M.A.—Transport numbers of K and Na in acetate solutions
S. O. Thompson—Solubility of furfural in ternary liquid systems
C. Unruh, M.A.—The reaction of acid chlorides with polyphenols
W. F. Weston, B.A.—Pentaerythritol tetrabromide with various hydrocarbons
F. E. W. Wetmore, M.A.—Thermodynamic potential of copper sulphate in aqueous solutions containing sulphuric acid
J. Wintrob—Phenylacetic acid and certain of its esters
E. E. Wood, M.A.—The chemistry of ferrous oxide
J. V. Young, M.A.—Reduction of nitroanthracene in alkaline media

Food Chemistry, under direction of Professor C. C. Benson

There has been only a small amount of research work carried on in this department during this session, as we have been kept very busy with routine work in classes, and so have had little time for the direction of graduate students or the doing of original work.

Studies of emulsions have been continued by Miss F. I. Honey, who has been granted the degree of Master of Arts. These investigations form a part of one general line of original work which we are trying to follow in this department—namely, studies of the chemistry of foods with special reference to physical and colloidal properties.

We have also been able, during this session, to prepare for work next session in relation to some special aspects of metabolism.

Geology, under direction of Professor W. A. Parks

Professor A. P. Coleman (professor emeritus) was engaged in the preparation of a report on Lake Iroquois and in field work on marine deposits of eastern Ontario for the Ontario Department of Mines.

Professor W. A. Parks continued his studies of Devonian stromatoporoidea and described several new species of dinosaurs.

Professor E. S. Moore prepared a report on "The Influence of Canadian-American Relations on the Canadian Mining Industry."

Under direction of Professor W. A. Parks.

J. P. Nowlan—The stratigraphy of the Silurian of Ontario.

E. W. Shaw—The stratigraphy of the Guelph formation.

J. C. Sproule—A study of the Cobourg formation in Ontario.

Under direction of Professor E. S. Moore.

W. S. Savage—Solution, transportation and deposition of manganese in nature.

S. Duffell—Diffusion in rocks and its bearing on the origin of ore deposits.

C. Godefroy—Causes of rock-bursts in mines with special reference to the Lake Shore mine.

A. W. Derby—Genetic relations of intrusive rocks in the Matachewan-Kirkland Lake area.

B. Russell—The role of chlorine in the origin of mineral deposits.

Under direction of Dr. D. R. Derry.

A. Holstein—Study of the Silurian sedimentary rocks of Ontario.

Household Science, under direction of Professor A. L. Laird

During the session 1934-35 two students have been doing graduate work in this department.

Miss D. C. Griffith has reviewed the literature in connection with certain aspects of diet and kidney disease and has made some tests with diets high in sodium chloride and similar diets but high in potassium chloride.

Miss L. M. S. Davis, working under Professor C. F. Valentine, is making a study of the comparison of tensile strength, detergency, and whiteness retention of fabrics washed by domestic and commercial laundry methods. This problem is being conducted with the co-operation of the Toronto Launderers and Dry Cleaners, and the Chemistry Division of the National Research Council, Ottawa.

Applied Mathematics, under direction of Professor J. L. Synge

The following researches have been in progress during 1934-35:

B. A. Griffith, M.A.:—For steady flow of a viscous liquid past a fixed circular cylinder Stoke's equations give a good approximation near the cylinder and

Oseen's equations at a distance from the cylinder. An attempt is being made to obtain a composite solution satisfying Stoke's equations near the cylinder and Oseen's equations or the equations of irrotational motion further out.

A. F. Stevenson, Ph.D.:—A method of approximate solution of Schrodinger's wave-equation has been developed in which the differential equation is replaced by an integral equation, and successive approximations used.

An attempt is being made to develop and solve numerical equations for diatomic molecules analogous to Harbee's equations for atoms.

J. L. Synge, Sc.D.:—Using a relativistic generalisation of Newton's third law, it has been found possible to give relativistically covariant definitions of the angular momentum and mass-centre of a system. The inverse square law of attraction or repulsion between two interacting particles is found to be a consequence of the conservation of momentum and energy.

On the basis of Einstein's field equations, the behaviour of a small symmetrical cloud of particles under the influence of gravitation has been investigated.

A simplified proof of the proportionality of energy and frequency of a photon in the general theory of relativity has been given.

The behaviour of an expanding universe is conditioned by the facts that pressure and density cannot be negative and that the pressure cannot exceed one-third of the density. On the basis of these inequalities a systematic discussion of the history of the universe is given.

The behaviour of adjacent geodesics in Riemannian space, a question of dynamical and geometrical interest, has been investigated.

Medical Research, under direction of Professor F. G. Banting

During the past year the majority of the members of this department have been engaged in various aspects of the two problems, experimental tumor and experimental silicosis.

Dr. F. G. Banting and Miss S. Gairns have continued the study of resistance to Rous Sarcoma.

Dr. W. R. Franks and Miss A. J. Watt have used tissue culture methods in attacking the tumor problem. With Miss E. Batho, Dr. Franks has endeavored to link a protein to certain carcinogenic ring compounds, in the hope that the combined substances would be antigenic.

Mr. L. D. Proctor has continued his investigation of methylglyoxal as a factor in lactate poisoning of tumor cells.

Mr. E. L. Outhouse has been endeavoring to separate the phosphoric esters of tumor tissue. In lymphosarcomas he found the phosphoric ester of an aminohexahydric alcohol. From other tumors two new compounds have been isolated.

Dr. D. A. Irwin spent nine months visiting laboratories in Europe. Since his return he has continued his work on silicosis.

Dr. J. Fallon has investigated the tissue reaction produced by the injection of finely particulate quartz from the time of injection up to periods of a year. He has studied various samples of sericite in a similar manner.

The biochemical aspect of the silicosis problem has been directed by Mr. C. C. Lucas since Dr. E. J. King left to take a position in the British Post Graduate Medical School in London. With Miss M. Dolan, Mr. Lucas has tested the solubility of quartz and certain silicates. They have worked on a micro-quantitative method for estimating aluminium in dust and tissue ash. Mr. Lucas, with Mr. K. Watson, has attempted to devise an analytical procedure for distinguishing between silica and silicates.

Dr. Franks and Miss Watt have continued their study of the changes that take place in monocytes following the ingestion of silica particles. With Miss Shaw, Dr. Franks investigated the influence of silica sols on proteolytic and autolytic enzymes.

Dr. Franks and Mr. Proctor have completed the construction of a photo-electric dust estimating machine.

Dr. G. H. Ettinger and Mr. G. E. Hall have continued their studies of the effect of long-continued administration of acetylcholine on the circulatory system. Various problems have arisen from this work and these are being investigated.

Dr. Ettinger, with the assistance of Mr. F. L. Lawson, studied the effect of repeated injections of histamine on the circulatory system of the dog. Miss J. Lang studied the biochemical effect of the histamine injections in these experiments.

Dr. Ettinger and Dr. Banting have been investigating the effect of repeated and long-continued vagal stimulation on the heart of the dog.

Mr. Hall has continued his investigation of the possible relationship between peptic ulcer and the chemical products of autonomic nerve stimulation. He has also studied certain aspects of the effects of damage of the hypothalamus in the cat.

Mr. C. C. Lucas is studying one component of the neutral sulphur fraction in normal human urine.

Mr. Lucas has collaborated with Dr. J. R. Ross, of the Hospital for Sick Children, in the development of a new method for the quantitative estimation of lead in urine.

Dr. A. R. Armstrong has succeeded in eliminating many impurities in phosphatase and has been able to prepare a highly concentrated product.

Dr. Armstrong and Dr. Banting have studied the blood phosphatase in dogs after the extirpation of various organs.

Mr. F. H. Lawford has synthesized a series of aromatic esters of phosphoric acid which are now being examined. The influence of structure on physical and chemical constants and the relative rates of hydrolysis by the enzyme phosphatase are being determined.

Medicine, under direction of Professor Duncan Graham

Dr. Warner is continuing his clinical and experimental investigations on bronchiectasis. He has published a valuable report on an uncommon type of bronchiectasis which he has termed "massive atelactatic bronchiectasis".

Dr. Cleghorn is making definite progress in his work on the assay of extracts of the adrenal cortex. The Connaught Laboratories have again very kindly offered facilities for the preparation of the extracts and Dr. E. W. McHenry of the department of physiological hygiene has given very generously of his advice and assistance in this work. Supplies of suprarenal glands have been provided again this year through the generosity of J. S. McLean, Esq.

Dr. Cleghorn and Dr. McVicar have been investigating the influence of diet on the survival of adrenalectomized rats. They have found that the nature of the diet has a profound influence on the survival of adrenalectomized rats. They are also studying the vascular reflexes and sympathin production in adrenalectomized animals. A study of the phospholipins in relation to the adrenal cortex is in progress They have made sodium and potassium balance studies on a number of cases of Addison's disease. The choline esterase content of the blood serum in cases of myasthenia gravis has been estimated.

Dr. Hyland is continuing his observations on cases of myasthenia gravis treated by glycine and ephedrine. He has published a report on twelve cases of subarrachnoid haemorrhage.

Dr. Oille and Dr. Rykert have published a valuable report of their observations on cases of coronary disease.

Dr. Hepburn has published a preliminary report on the effect of total ablation of the thyroid gland on patients with angina pectoris and congestive heart failure.

Dr. Wrong is continuing his investigation on "poison ivy". He has published a report on the "Patch Test" as an aid in the diagnosis of eczema.

Definite progress is being made in the investigation of other clinical problems, some of which have been referred to in previous reports.

Mineralogy and Petrography, under direction of Professor T. L. Walker

Dr. T. L. Walker has carried on during the year the following investigations:

The differentiation of the Sudbury nickel eruptive, a subject of which he has been a student for over forty years.

A study of mine dust with a view to determining the proportions of the minerals of which it is composed. This is of fundamental interest in the study of silicosis, to which miners, particularly those working in gold mines, are subject. It is now assured that a method has been found for accurate determination of the per cent. of quartz and it is hoped that the same method, if the experiments are continued, will give the proportions of the other principal minerals in the dust. The method is based on a study of X-ray diffraction patterns. We are greatly indebted to Professor G. L. Clark of the University of Illinois for his kindness and skill in the conduct of all the X-ray work.

Professor A. L. Parsons has studied the occurrence and character of a very unusual garnet found at West Thetford, Quebec.

Professor Ellis Thomson has continued his studies of the tellurides in the gold areas of Canada.

Mr. V. Meen's studies of the character of the quartz in which the gold ores of Canada are found indicate that the quartz at Porcupine and Kirkland Lake is alpha quartz, while in the quartz in some of the new fields in North-western Ontario both alpha and beta quartz are recognized. These studies fix in some degree the temperatures at which the gold-bearing quartz was formed.

Mr. A. S. Dadson has been working on the relationship between the potential of minerals and ore deposition.

The research work in this department has been limited to a large extent by the withdrawal of the grant for the payment of research assistants.

The fossil insects discovered in the Amber from Cedar Lake, Manitoba, in 1933, are being described by Dr. F. M. Carpenter of Harvard University.

Obstetrics and Gynaecology, under direction of Professor W. B. Hendry

Further investigations are being carried out by Drs. VanWyck and Mann in connection with the toxaemias of pregnancy.

Dr. Mann has completed his work in connection with the application of the principle of a mechanical device known as a split universal joint to a new obstetrical forceps.

Dr. Henderson has completed his investigation into the value of vitamines in lowering the incidence of puerperal infection. He is also carrying out an investigation into the value of certain sex hormones in the treatment of menorrhagia and dysmenorrhoea.

Dr. Goodwin is completing an exhaustive study of the changes in the pelvic tilt during pregnancy. In conjunction with Dr. Mann he is also investigating the value of certain forms of hydro-therapeusis in the treatment of pelvic inflammation.

In collaboration with the department of radiology, Dr. Cosbie has been making a radiographic study of the measurements of the pelvis in relation to the foetal head, and has also been investigating the value of thorotrast as a contrast medium, as an aid to diagnosis of certain obstetrical conditions.

The department has also co-operated with the departments of urology and radiology in a study of the physiological changes which occur in the ureters during pregnancy.

Drs. Scott, Cosbie and Watt, in collaboration with the Institute of Radium Therapy, have been carrying out some valuable work in connection with the treatment of carcinoma of the genital tract.

Ophthalmology, under direction of Professor W. H. Lowry

There has been an increase in the number of specimens received for section from Toronto and from all over Ontario. One hundred and eight specimens were received and of these eleven were melanotic sarcomas and three neuroblastomas of the retina. In connection with these fourteen specimens alone, over fifteen hundred sections were made which shows the amount of work entailed to make a diagnosis. The question of making a charge for this work on the specimens from sources other than our own hospital has been considered but no action has been taken as we would not wish to discourage physicians from sending the specimens, in any way, as the material is frequently very valuable and instructive.

Dr. Johnston is assisting Dr. MacDonald in the Laboratory and is being trained to carry on the work. We are endeavouring to have as many as possible of the Junior Surgeons do the work as it will improve the standard of the Ophthalmological Staff generally.

Dr. Morgan is experimenting on the transplantation of corneas from one animal to another as is being done in a few centres. If the technique can be perfected a lot of persons, who are now nearly blind from corneal scars, will be helped considerably. In England and on the Continent successful cases have been reported in which blind persons have been made to see well enough to make them independent. So far Dr. Morgan has been working on the corneas of rabbits and moderate success has been obtained. Within a year, however, we hope that we may be able to report the results of work done on the human eye.

Oto-Laryngology, under direction of Professor P. G. Goldsmith

The work of the Department of Oto-Laryngology for the past year has in the clinical department, been carried out with considerable difficulty owing to the construction of the new Out-Patient's Department.

The work in the pathological laboratory has increased very greatly, and there are now three active workers in Dr. McGregor, Dr. Ireland, and Dr. McLeod, the two latter being full or part-time workers. During the past year an exhibition of pathological and anatomical work was made during a week's meeting of four international Oto-Laryngological Societies. This exhibition was very highly commended on by leading Oto-Laryngologists of the Continent.

Paediatrics, under direction of Professor Alan Brown

Working in association with the Department of Pharmacology and the Banting and Best Department of Medical Research, further studies have been made on the important subject of the prevention of poisoning in children. Recommendations have been made to prohibit the use of certain pharmaceutical products which have been found to be the cause of the death of many Canadian children each year.

Observations have been continued on children suffering from nephritis and it has been found that a number of these patients have an underlying anatomical defect. Some of these defects lend themselves to surgical correction. Further progress is being made in the study of various chest conditions in children from the standpoint of their treatment and prevention.

In conjunction with the Connaught Laboratories an extensive survey has been made on children suffering from meningococcic meningitis from the standpoint not only of treatment and prevention but from the standpoint of the

epidemiology. The work on the development of an effective whooping-cough vaccine and also the use of placental extracts in the prevention of measles is progressing with satisfactory results.

The joint effort with the department of physiology on an investigation of the effect of dietary deficiencies in early life on learning ability is being continued.

Studies have been made on the iron requirements of children and the availability of iron in foods. It has been found that only a portion of the total iron in food is available for the iron nutrition of children. This is a very important observation and our present conception of iron metabolism will probably have to be changed.

Interesting studies have been made on the effect of a low mineral intake on intestinal stasis. During the past year it has been found that a diet low in calcium and potassium results in marked stasis in the appendix. Further studies are being conducted on this aspect of the work which may give results of considerable practical value.

Nutritional studies are being continued and information is being obtained which indicates very definitely that diets which we have considered adequate are still not optimal and that simple changes may be made which will do much to increase the health of the children of Canada.

Pathology and Bacteriology, under direction of Professor O. Klotz

Dr. P. H. Greey, in charge of the diagnostic clinic in bacteriology, is continuing his work on human actinomycosis and is also making a comparative study of the bovine disease. Dr. R. Margarite Price, who has done such valuable work on tubercle bacilli in human tuberculosis, spent some months in Great Britain during the last year, and came in close contact with the work being done there.

A number of studies by members of the Staff have been completed, others are still being investigated. Dr. W. L. Holman compiled a useful review of Studies on Staphylococci and with Miss Arline E. Carson published a paper on Technical Errors in Studies of Bacterial Variation. Dr. E. J. Clifford's bacteriological study of the faecal flora from clinical cases is continuing. Dr. K. A. Roberts has extended his investigation of fibrinolysis by human haemolytic streptococci to the presence of an anti-fibrinolytic substance in the plasma of convalescent cases. E. W. Bond completed the work on his thesis "Morphology in Cultures of Tubercle Bacilli" for the degree of D.V.Sc. Dr. R. W. Graham a voluntary assistant in bacteriology carried out a useful study of Pneumococcaemia in pneumonia patients, for which he received the degree of B.Sc.(Med.). The same degree was earned by Dr. J. C. Richardson, who submitted a thesis on "Cerebral Arteriolosclerosis", and by Dr. J. F. Roberts whose study was on the subject of "The Early Phases of Thrombosis in Vessels". Dr. T. H. Belt has contributed a valuable review on the Pathology of Pneumonoconiosis. Dr. G. H. Fetterman has a paper in the press on "A Study of the Vascular Lesions in Surgically Excised Stomachs". Co-operation with Mr. H. E. LeMasurier, of the department of anatomy, has resulted in the perfecting of a staining technique, which is proving its value, particularly in the study of brain tumours, a description of which by Mr. LeMasurier will appear in the Archives of Neurology and Psychiatry. Miss H. P. Tett received her M.A. degree while working as a technician in the division of neuropathology, having completed an investigation of the sensory end-organs of arterial walls. Dr. Mary I. Tom is engaged in research investigation into (1) Histological changes accompanying cerebral softening, and (2) Senile degenerative changes in the cerebral cortex. Dr. William Keith is investigating peripheral nerve degeneration. Special studies are being continued on problems of gastric and duodenal ulcers, arteriosclerosis and tuberculosis.

Pathological Chemistry, under direction of Dr. Nicholson

A large part of the research work this session has been concerned with the application and extension of the system of sugar analysis devised by Harding

and Nicholson. A method for the analysis of mannose by the use of the micro-organism Gaffkya tetragena has been developed thus completing the system of analysis as far as the more commonly occurring sugars are concerned. The use of micro-organisms has also been extended to the analysis of hexose-phosphates and a relatively rapid method for the quantitative analysis of these substances in muscle filtrates has been evolved.

Dr. D. L. Selby and Mr. J. B. Scott have been continuing the investigation of the use of xylose as a test substance for determining kidney function particularly in relation to pathological cases.

Dr. R. M. Archibald has completed the studies begun last year on the nature of the non fermentable carbohydrates of normal urine.

Mr. S. H. Jackson has been associated in an investigation into the relationship between carbohydrate metabolism and infection with staphylococcus, which is being carried out in collaboration with Professor W. L. Holman of the department of pathology and bacteriology.

Dr. R. W. I. Urquhart (in collaboration with Dr. J. L. McCollum of the department of surgery) has continued the work on kidney function tests in the field of genito-urinary surgery. Dr. Urquhart has also been assisting in experimental studies designed to explain some of the apparent anomalies of kidney function occurring in certain pathological conditions.

Pharmacology, under direction of Professor V. E. Henderson

The staff has been very actively engaged in research, and though the publications appearing during the year are not numerous, this is largely due to the fact that several papers are in hand which have not yet been published. Dr. Roepke and myself have continued our studies on acetylcholine, particularly in regard to its action on the urinary bladder, and a paper has gone to press dealing with this work. Dr. Welch completed his study of certain rare alkaloids isolated by the National Research Laboratory in Ottawa, and papers dealing with this study have appeared. Also in conjunction with Dr. Heard who was working under the Banting Research Foundation in the department of biochemistry, a study was made of the stabilisation of adrenaline as secreted from the adrenal gland by ascorbic acid and other substances. This work has revealed a very interesting example of the interrelations of the oxidation reduction mechanisms of the human body. This paper has recently appeared in the Biochemical Journal. Professor Lucas has continued his study of mucus secretions, and has devised the necessary apparatus to yield the information in regard to its stickiness and viscosity. Some of the properties of these interesting secretions are exceedingly difficult to evaluate in any ordinary physical terms. The physicists indeed do not seem to have encountered in their work substances with analogous properties, and in consequence a final paper dealing with the information acquired has been withheld until further studies could be made, though a preliminary report was given before the American Society for Pharmacology. Drs. Welch and Roepke have succeeded in synthesizing two analogues of choline, namely phosphocholine and arsenocholine, and have made a study of certain of their chemical properties and also a study of the quantitative differences in their reaction in body. The purpose of this study was to throw some light on the means by which these substances produced their reactions in the body and certain progress has certainly been made. As a result, one paper has gone forward to the press and another will soon follow. Mr. A. H. R. Smith, working on a special scholarship, has studied some of the chemical means by which cyclopropane could be produced and in connection with this work has discovered one or two methods of theoretical interest. These studies, too, will form the basis of papers in the near future. Though the number of papers published during the year is not great, a firm foundation has been laid for future communications.

Physics, under direction of Professor E. F. Burton

During the session 1934-35 there were sixty graduate students in attendance in the department of physics. Of these twenty-six were engaged in experimental work in research, and the remainder were taking various courses of lectures. Eighteen students were enrolled for the Ph.D. degree in physics, and eight for the M.A. degree in physics or meteorology. Thirty-four students from other departments and faculties were enrolled in courses in physics as part of their work for the Ph.D. degree and the degrees of M.A. and M.Sc., and one student was enrolled for the diploma in radiology. In physics three students were granted the Ph.D. degree, three the degree of M.A. and five the degree of M.A. (meteorology).

Special lectures have been given during the session as follows:

By Sir John C. McLennan, professor emeritus, during the month of April.

By Professor S. S. Kistler, department of chemistry, University of Illinois, three lectures, February 4, 5, and 6, on (*a*) The Thermal Conductivity of Porous Materials as a Function of Pressure and Composition of the Gas Phase. (*b*) The Theory of Capillary Condensation in Gels. (*c*) The Lowering of the Freezing Point of Water.

Dr. Saul Dushman of the General Electrical Research Laboratory, Schenectady, two lectures on (*a*) Van der Waals' Forces, (*b*) Activation and the Boltzmann Theorem, on February 14 and 15.

In co-operation with the Department of University Extension, the Department of Physics offered a series of lectures on Friday evenings from October 5, 1934 to February 8, 1935, inclusive. These lectures were intended particularly for advanced scientific students in departments other than physics in the University, and for science teachers in the High Schools within a convenient radius of Toronto. The complete list of lecturers and subjects is as follows:—

Professor Gilchrist—3 lectures on magnetic and electrical methods in ore prospecting.

Professor W. H. Martin—one lecture on the chemical elements.

Dr. Elizabeth Allin—three lectures on isotopes.

Dr. Charles G. Fraser—Science Master at Harbord Collegiate—three lectures on early sources in the study of physics.

Professor John Satterly—one lecture on the early history of relativity.

Dr. H. F. Batho—one lecture on the new radioactivity.

Dr. W. H. Kohl—of the Research Laboratory of the Rogers Radio Tube Co., Toronto—three lectures on fundamental principles and applications of electron optics.

The average attendance at these lectures was about three hundred and fifty.

The department wishes to record the gift, by Sir John McLennan, of the following piece of apparatus,—a Siegbahn grating.

During the year there has been designed, constructed, and brought into use, by the department the following: (*a*) special mounting for a double prism E_1 quartz spectrograph, (*b*) mounting for new three-metre vacuum grating, (*c*) mounting for double interferometer.

The emanation plant for the production of radon seeds, which was installed by the Department of Health of the Ontario Government, but which is under the general direction of the director of the physical laboratory, has been working continuously all year, under the direct supervision of Mr. J. D. Leitch, and Mr. E. O. Braaten.

The cryogenic department of the department of physics has also been in constant efficient operation, and has supplied liquid air to all departments in the University requiring it.

As has been our custom, the department of physics has co-operated with other scientific departments in the University, with the Ontario Research Department, and with various Government departments, in particular, with the Department of Health.

In the organisation of research work in physics the members of the staff and the research workers are divided into groups depending on the phase of work in which they are interested, and the members of these groups co-operate fully in planning and carrying out the researches in which they, as a group, are engaged. Researches under the direction of Professor E. F. Burton

Work on Superconductivity:

At the meeting of the Royal Society of Canada, in Hamilton, in May, 1935, Section III devoted one morning to a symposium on superconductivity, in which most of the papers were given by members of the staff in the department of physics at Toronto. In these addresses accounts were given of the research work carried on in the department under this heading. This may be summed up as follows:—

Superconductivity of thin films of lead and the action of external magnetic fields on thin metallic superconducting films, by J. O. Wilhelm, F. G. A. Tarr, and A. D. Misener.

Construction and theory of a superconducting galvanometer by H. Grayson Smith, F. G. A. Tarr, and J. O. Wilhelm.

Viscosity of Helium I and Helium II. The results are given as follows:

Helium I at 4.2°K..... =0.00011 C.G.S. units.
Helium I at 2.3°K..... =0.00027 C.G.S. units.
Helium II at 2.2°K..... =0.000033 C.G.S. units.

Work on Spectroscopy:

During the year Mr. M. F. Crawford, who has charge of the work in spectroscopy, has been absent as holder of a fellowship from the Royal Society of Canada. During this year he has published three papers on this work, one in conjunction with Dr. Norman S. Grace, one of the assistant-demonstrators in the department. These publications of Mr. Crawford have been based on work done by him in Toronto in previous years. During this year the work on spectroscopy has been carried out by Messrs. A. M. Crooker, Richard Richmond, M. Johns, and S. Bateson, in co-operation with Professor McLay and members of the permanent staff. They have completed work on the classification of lines and the hyperfine structure of lines of Bismuth II, Bismuth III, and Bismuth IV, and Lead III and IV, and Antimony IV.

Also the following special investigation has been carried on:

Structure of the Spark Spectra of Mercury, by A. B. McLay and M. W. Johns.

Using an electrodeless discharge in mercury vapour as source the spectra of mercury have been photographed in the spectral region 700-9000 A, under different conditions of excitation. The plates have been measured and reduced in the region 2400-6600 A. Many prominent lines in this region, previously unreported, show excitation characteristics of Hg III lines. A preliminary investigation of the hyperfine structure of the spark spectra of mercury, using the twenty-one foot concave grating has disclosed an abundance of hyperfine structure patterns.

Miscellaneous:

Viscosity Effects in a Channel of Small Exponential Divergence. By G. N. Patterson.

A continuation of work done last year. The results have been embodied in two papers in the Canadian Journal of Research.

The Charge on a Colloidal Gold Particle. By Miss M. Annetts and Lorne Newman.

An attempt to measure the size of the charge on a particle of colloidal gold by estimating spectroscopically the amount of electrolyte adsorbed by the gold in coagulating. Measurements were made of the amount of both peptising and coagulating electrolyte present under various conditions, in the supernatant liquid and in the precipitated gold.

The Conductivity of Thin Films of water as Determined by the Burton-Pitt Moisture Tester. By L. G. Turnbull.

It was found that for water of conductivity of the order of that of tap water, different thicknesses of films gave the same deflection in the moisture tester, showing that the conductivity was a surface effect.

The Diffusion of Gases through Fused Quartz and Copper. By E. O. Braaten and G. F. Clark.

A. The rates of diffusion of helium through fused quartz have been measured for temperatures from −78°C to 560°C and for pressures from 1 to 76 cm. of Hg, and for thicknesses from .02 to .2 cm. The rate increases (1) logarithmically with the reciprocal of the absolute temperature, (2) linearly with pressure, (3) inversely with the thickness.

B. The rates of diffusion of hydrogen through copper have been measured for temperatures from 160°C to 320°C and for pressures from 1 to 76 cm. of Hg. The rate increases (1) logarithmically with the reciprocal of the absolute temperature, (2) with pressure in a manner similar to Langmuir's absorption isotherm.

Variation with Temperature of the Piezo-Electric Property of Quartz. By Arnold Pitt and D. R. McKinley.

Variations of the piezo-electric effect in quartz have been observed down to 2.0°K by the static method. A further investigation was carried out over the range 4° to 815°K, using a vibrating quartz plate to secure a continuous record of variation of the effect with temperature.

Absorption of Light by Liquid Ammonia Solutions of the Alkali Metals. By L. B. Leppard.

The transmission of ultra-violet light through small thicknesses (of the order of a few hundredths mm.) of concentrated solutions of sodium and caesium in liquid ammonia is being investigated. A special absorption cell has been devised which permits of the work being carried out conveniently at room temperatures.

Sensitized Fluorescence in Mixtures of the Alkali Metals. By H. L. Welsh.

By illuminating a mixture of the vapours of sodium and potassium with the D-lines of sodium, sensitized fluorescence of potassium is observed. Similar results are obtained for mixtures of sodium and rubidium, and sodium and caesium. These simple cases of energy transfer between atoms by collision indicate a possible mechanism for such transfers.

Intensity Ratio of the D-Lines in Sodium Resonance Fluorescence. By H. L. Welsh.

In sodium resonance fluorescence at high vapour pressures (up to 4 mm. of mercury) a variation in the intensity ratio of the D-lines has been observed. The effect is probably due to a difference in the absorption coefficients of the vapour for the two lines and a disturbance of the population of the excited states $^2P_{1/2}$ and $^2P_{3/2}$ by collision with normal atoms.

The Mean Free Path for a Neutralization and for an Ionisation. By H. F. Batho and A. R. Clark.

An attempt is being made to check the values of the mean free path for the ionization of atoms and the path for the neutralization of ions and of neon and helium in collision with similar atoms.

The free paths for the neutralization and ionization of high-velocity ions of neon in collision with atoms of helium are being found.

Crystalline and Amorphous Ice. By W. Fraser Oliver.

X-ray photographs of the ice formed by the condensing of water-vapour on the outside of a copper rod maintained at various low temperatures were taken by the Hull-Debye-Scherrer method. These experiments indicate that there is a certain temperature, about −110°C., below which the condensate is vitreous and above which crystals are formed.

Specific Heat of Copper at Low Temperatures; Liquid Air, Liquid Hydrogen, Liquid Helium. By S. M. Dockerty.

This is a continuation of work carried on last year.

In co-operation with Mr. J. D. Leitch, of the Ontario Department of Health, Miss M. Annetts and Mr. Hamilton Sims, have spent considerable time in the measurement of dust particles suspended in air under factory conditions, and in co-operation with other members of the Department of Health, Mr. G. A. Purdy has carried on experiments on the spectroscopic indications of the presence of lead in the animal body.

Miss F. M. Quinlan has been working, in co-operation with Dr. T. R. Loudon in problems on photoelasticity.

Mr. J. M. Anderson, who obtained his Ph.D. degree in 1933, and who is now on the staff of Scarboro' Collegiate Institute, has been carrying on very successful experiments on the duration of normal states in electrical discharges through gases.

Dr. Colin Barnes has been working independently on some problems in mathematical physics:—as, for example:

Some Mean Values in Elliptic Motion—Certain mean values in elliptic motion are computed for use in statistical determination of masses and parallaxes of binary stars.

Diflusion through a Membrane—A result obtained previously for diffusion through a membrane has been extended to cover the case where the diffusion constant depends on the concentration. The simple case where the dependence is linear can be solved completely when the membrane is thin, and provides a result of some experimental interest.

Dr. J. K. L. MacDonald has been working independently and in conjunction with Dr. Elizabeth Allin on the researches:

A Method for Successive Approximations to Sturm-Liouvill Proper Values (J. K. L. MacDonald).

An iterative method based on the Riccati form of S.L. equations was developed for obtaining proper values and nodes without involved calculations such as arise in the usual "W.B.K. Method".

The Two Centre Problem in Wave Mechanics. (By J. K. L. MacDonald and Dr. Elizabeth J. Allin.)

Asymptotic series solutions in ascending powers of the internuclear distance are obtained in a form suitable for applications in molecular theory. The question of logarithmic singularities was considered.

Research under the direction of Professor John Satterly

A Measurement of Surface Tension by means of Stationary Waves on a Vertical Jet. By John Satterly, and J. C. Strachan.

The standing waves set up when a vertical jet strikes a liquid or solid barrier are used to find values for the surface tensions of water and mercury. This is done in accordance with the theoretical relationship between the wave-length, the diameter and velocity of the jet and the surface tension. The values found for water are in fairly good agreement with those found by static methods while the values for mercury are considerably higher than those recently found by the sessile drop method.

Research under the direction of Professor Gilchrist

During the summer months of 1934, Professor Gilchrist took a party consisting of F. J. P. Consitt, F. G. Millar, and I. Gringorten on geophysical investigations in part of the Sudbury basin. In these investigations both magnetic and electrical methods were used. The running expenses of this party were supplied by the Geological Survey of the Dominion of Canada, a portion of the other expenses by the University of Toronto, but all of the party served without pay. Very encouraging results were obtained, and it is hoped that this kind of research will be continued as a summer laboratory in geophysics. As a result of the work done, two papers were presented to the Royal Society of Canada at its meeting in May, 1935, as follows:

Location of a Magnetic Ore Body (Pyrrhotite). By Lachlan Gilchrist, F. J. P. Consitt, F. G. Millar, and I. Gringorten.

Application of the Central Line Electrode Method to Indicate the Position of a Conducting Ore Body (Pyrrhotite). By Lachlan Gilchrist, F. J. P. Consitt, F. G. Millar and I. Gringorten.

Professor H. A. McTaggart has been continuing his research on the properties of thin liquid films.

During the year the following students have been doing their research work in the department as holders of fellowships or scholarships:

G. F. Clark—Fellowship from the Graduate School of the University of Toronto.

A. M. Crooker—Fellowship from the National Research Council of Canada.

S. M. Dockerty—Fellowship from the National Research Council of Canada.

G. N. Patterson—Bursary from the National Research Council of Canada.

Physiology, under direction of Professor C. H. Best

The equipping of the preparation room which adjoins the south lecture room in the Medical Building has made possible more demonstrations to the third year medical students. The use of the south lecture room for these demonstrations instead of the poorly ventilated room previously used has been greatly appreciated by both the staff and the students.

A very considerable amount of time has been spent this year by Dr. N. B. Taylor and the head of the department in the preparation of a new text of applied physiology. The book, which is to be published in the late summer by The Williams and Wilkins Company, will be entitled "The Physiological Basis of Medical Practice". It is felt that the preparation of a book of this kind will result in improvement in the teaching of physiology to medical students in our own University at least.

The head of the department has been elected to the Council of the American Physiological Society. Researches carried out under his immediate direction have included (1) further work on choline as an accessory food factor (in collaboration with Miss M. E. Huntsman and Mr. R. A. Mustard). The evidence is now adequate to enable us to include choline in the list of accessory food factors or vitamins. (2) In collaboration with Dr. F. G. Young, the first Beit Memorial Research Fellow to be sent to work in Canada in the biological sciences, and Miss M. E. Huntsman, it has been shown that depancreatized dogs on a low choline diet rapidly develop extremely fatty livers, and that even in the absence of insulin relatively little sugar is excreted. The researches on heparin in collaboration with Dr. Murray of the department of surgery and Mr. L. B. Jaques have given very promising results.

As stated above, Professor N. B. Taylor has been largely engaged in the preparation of the new text-book of applied physiology, but under his direction, and with the collaboration of Dr. C. B. Weld, work has been continuing in several directions. An interesting study has been made of the mechanism by which ergotoxin produces a condition of rage in cats. With the assistance of Dr. J. R. F. Mills further information has been gained relating peristalsis and mechanical distension as a cause of death in acute intestinal obstruction. With Mr. J. F. Sykes the condition of tolerance to parathormone and to irradiated ergosterol has been studied, and further information obtained relating the vitamin with the endocrine factors. With Dr. H. E. Woodward an improvement has been devised in the technique of determining blood volumes. The change in the blood volume, plasma fibrinogen, and in the suspension stability of red blood cells has been examined following various surgical operations and shock. Mr. J. F. Sykes has been determining the various fractions of calcium, including that adsorbed by barium sulphate, in the serum of normal animals, after intravenous infusion of soluble calcium salts, and after administration of parathormone and of irradiated ergosterol.

Dr. Laurence Irving, now Professor of Experimental Biology, has been engaged in the following investigations in the department of physiology.

From the gill arches of the dogfish sensory impulses pass along the glossopharyngeal and vagus nerve branches when the blood pressure rises above the normal level. These nerves are embryologically homologous and physiologically similar to the important carotid sinus and cardiac depressor nerves in man. The results obtained in collaboration with Dr. D. Y. Solandt and Mr. O. M. Solandt, who held the Collecting Net Fellowship at the Marine Biological Laboratory, Woods Hole, indicate the origin of an important element in the control of the blood pressure. The work was done at the Woods Hole Oceanographic Institute.

An investigation of the adjustments of seals to diving was carried on at the Atlantic Biological Station, St. Andrews, with aid from the Elizabeth Thomson Science Fund and the Medical Research Best Fund. The salt excretion, respiratory function of the blood, metabolism and control of respiration and circulation were studied. The results indicate the nature of physiological adjustment to diving. They likewise reveal some important facts in the control of respiration and circulation. These controls are quite distinct in diving animals, and accentuate the physiological processes involved during asphyxia. This work was done by Professor Irving in collaboration with Mr. K. C. Fisher, Mr. O. M. Solandt, Dr. D. Y. Solandt, Miss Jeanne F. Manery and Mrs. M. S. Welch.

Investigation of the action of cyanide and carbon monoxide as respiratory poisons has been continued on the embryonic heart of fish by Mr. K. C. Fisher. The results throw light upon the metabolism of the heart, and in particular upon the susceptibility of the heart to asphyxia.

The investigation of the electrolyte balance in developing eggs and tissues has been delayed by the lack of a suitable method for estimating the total base. After two years' work the method is now reliable and can be used for many projected studies by Miss Manery and Dr. Irving.

Study of the oxidation processes in the liver by the Warburg technique has indicated that choline increases the oxygen consumption. The effect has been related to the fat content of the liver, and in conjunction with the other studies the results characterise in another way the important influence of choline upon fat metabolism. Mrs. M. S. Welch, who has been largely responsible for this work, has been assisted by the Banting Research Foundation.

The enzyme carbonic anhydrase has been prepared and studied with a view to its essential relation to calcium carbonate formation, and hence to that of bone. This work, which is still preliminary, has been conducted by Miss K. M. Robertson (assisted by the Banting Research Foundation) under Dr. Irving's direction.

Dr. Irving will continue to work in marine physiology at Woods Hole as director of the course this summer.

Investigations on the metabolism of fructose in mammals have been continued by Dr. E. T. Waters and Miss J. P. Griffiths. They have confirmed the results of Mann and Bollman that fructose is almost as efficacious as glucose in maintaining the life of the liverless dog. Contrary to the findings of these workers it has also been shown that the same conclusion applies to the completely eviscerated dog. It therefore appears that muscle tissue is able to utilise fructose. In the analytical procedures of these studies use has been made of the organism Proteus Vulgaris, cultured for them by Dr. D. T. Fraser. Under suitable conditions these organisms completely remove glucose from solution, but are without effect on fructose. Some success has also been achieved in determining the mechanism of removal of glucose by this organism.

Dr. Waters and Miss Griffiths have not been able to repeat the experimental results of earlier workers who found that the sole product of hydrolysis of glycogen by glycerol extracts of muscle was a trisaccharide. Rather, a mixture of substances has been isolated. This mixture on further incubation with additional muscle extract is completely converted to glucose. No conclusive evidence of the formation of a trisaccharide has been obtained.

Dr. Waters has collaborated with Dr. Caulfeild and Dr. Brown in an investigation the results of which have definitely established that a multiplicity of antigens is involved when patients are sensitised to ragweed pollen. A rough fractionation of a whole ragweed extract was made, and that these fractions contain different antigens has been demonstrated by the Prausnitz-Küstner reactions, using serum from ragweed sensitised individuals.

Psychology, under direction of Professor E. A. Bott

During the session 1934-5, forty-nine graduate students were in attendance in the department of psychology. Of these, twenty-two were engaged upon psychological investigations, experimental, observational or theoretical, the others taking courses of instruction; five were registered from other departments for a part of their post-graduate work. Two students completed the requirements for the Ph.D. degree and eleven the requirements for the M.A. degree in psychology. The names of these candidates and the subjects of their theses follow:

For the degree of Doctor of Philosophy:

D. Syngg—The relative difficulty of mechanically equivalent tasks: A study in human and animal learning.

W. Wees—The effect of the form of the presentation on the form of the reproduction of prose passages.

For the degree of Master of Arts:

Adaskin, E.—A comparison between the achievement of pupils in a progressive school and that of a similar group of pupils in a public school.

Bowers, N. K.—The effect of (*a*) a low protein diet and (*b*) an iron deficient diet on learning in the rat.

Brown, H. C.—An analysis of the technique for training preschool children in eating habits in the St. George's School for Child Study.

Davidson, M.—Schizophrenic performance on the Stanford revision of the Binet-Simon test.

Dewan, J. G.—The incidence of (*a*) schizophrenia (*b*) mental deficiency with reference to birth order.

Field, G. R.—Some relationship between variability in school achievement and scores on psychometric tests.

Fleming, M.—A study of the reliability and validity of a test of "Intelligence".

Mason, M.—A study of the influence of instruction on the learning of preschool and elementary school children.

Miller, H. C. H.—Time relationships of antagonistic muscles in voluntary movement.

Ord, N.—Play interests of the preschool child.

Walker, E. M. H.—Trends in companionships of Public School children.

During this year members of the staff in psychology have been engaged on special researches, individually and in co-operating groups. The previously adopted plan whereby members of our staff have undertaken research responsibilities in conjunction with other groups of investigators within the University and outside has been notably advanced. This pertains particularly in the following directions, with the Ontario Department of Health (Mental Hospitals Branch), The Canadian National Committee for Mental Hygiene, Accident Prevention Associations in Ontario, The Infants' Home and the Juvenile Court of the City of Toronto, and the Department of Paediatrics of the University.

A series of laboratory studies on analysis of muscle action in voluntary motor activity of human subjects is being conducted by E. A. Bott, the results to appear shortly in a commemorative volume to Professor Raymond Dodge of Yale University. Plans are also being laid for the establishment in the department of a Speech Laboratory and Clinic for the study of normal speech phenom-

ena and speech defect, especially stuttering. Necessary apparatus for this is being procured, including complete equipment for talking films, contributed by the St. George's School for Child Study. G. P. Cosgrave and E. A. Bott are further developing a photographic technique for recording eye-movements in reading and other visual processes.

Under the direction of S. N. F. Chant and G. P. Cosgrave an Industrial Accident Clinic has been opened at 71 St. George St. Methods of testing have been devised and test apparatus designed and constructed. Accident prone cases are referred for psychological study through the co-operation of the industrial Accident Prevention Associations of Ontario. Adult norms of performance are also being compiled from student subjects.

Professor Chant has continued his investigations on the measurement of attitudes with special attention to emotional concomitants of extreme attitudes of optimism and pessimism; the evaluation of attitude measurement in problems of mental health is receiving prominent attention. The mathematical side of methods of multiple factor analysis here promises important theoretical implications for psychology.

Professor W. Line has developed significant studies in the fields of educational adjustment of children and of mental health of adults. The former concerns the careful measurement of variability in school performance and its relationship to special abilities and disabilities and to personality factors. The latter utilises variability in performance upon certain psychological tests for comparison of normal with abnormal adult subjects. He is also conducting experiments in teacher selection and appraisal and a series of studies on learning and remembering adapted to various age levels.

K. S. Bernhardt has been appointed research assistant in animal psychology in the department of paediatrics in order to supervise studies on learning with animal subjects under conditions of dietary deficiencies as conducted in the nutrition laboratory of that department. The animal laboratory quarters at 69 St. George St. are also being extended and improved to permit learning studies with rats and monkeys on lines comparable with analogous studies in human subjects.

J. D. Ketchum has obtained over one hundred additional full life histories from senior undergraduates which, with his previous material of this kind, make an invaluable collection of psychological data for analysis. An adaptation of the Chicago plan of analysis has been made for these documents for their classification into types. Inter-familial attitudes and relationships is proving to be a point of major importance.

K. H. Rogers, working with children and parents through the Infants' Home and in co-operation with the Children's Aid Society of Toronto, has conducted three special studies: Apparent oscillation in the mental level of a group of subnormal children (30 cases); perseveration as a personality measure with adults (3 groups); a practical scale of intelligence test norms for preschool children (600 cases). These quantitative studies are not only of theoretical importance but each year they are adding to the clinical efficiency of the agencies concerned.

In the division of child psychology, conducted in the St. George's School, Professor W. E. Blatz, as director of the School, this year has assumed full responsibility as chairman of the University Committee on Child Study and Research. The research programme of the School has continued the observational study of child behavior and in addition has undertaken the systematisation of the routine activity records on file from several years. Principles from these data from the nursery school situation form the basis for instruction in child psychology. Steps are also being taken to extend a comparable plan of observation into home situations through the parent groups conducted by the School and through the Extension Department of the University. A beginning was made this year in laboratory studies of motor performance by preschool children.

Surgery, under direction of Dr. W. E. Gallie

During the year some important progress has been made in problems of research. It is the policy of the department to try to interest the purely scientific departments in clinical problems and to obtain their skilled assistance whenever possible. In this relationship I have to thank all our sister departments for their sympathetic co-operation and particularly the Dean, Sir Frederick Banting and Doctors Best, Klotz, King, Linell, Dolman and Richards.

Dr. Gordon Murray, with the assistance and supervision of Professor Best, has continued the study of the application of the knowledge already acquired in regard to heparin, to clinical surgery. This problem is two fold, first to find a means of preventing post-operative thrombosis and embolism and second, to eliminate the local tendency to thrombosis after operations on bloodvessels. They have now arrived at a stage where the experiment may be tried on patients.

Dr. Botterell and Dr. King, working in Sir Frederick Banting's laboratory, completed an important study of phosphatase in relation to fractures. Their work has recently been published in *The Lancet*.

Dr. Wm. S. Keith, in conjunction with Dr. J. Sullivan of the department of oto-laryngology, working under the supervision of Dr. E. Linell, has undertaken a study of nerve regeneration. This work has been stimulated by the recent statements of Ballance and Duel that nerve suture is more likely to be successful if delayed until Wallerian degeneration has taken place in the distal portion of a cut nerve and also that nerve grafts are more likely to "take" if made from degenerated nerves than from freshly cut nerves. These statements are so revolutionary that they require immediate investigation.

Dr. D. R. Mitchell is pursuing his study of the pathology of prostatitis and with the assistance of Professor Klotz is making an excellent collection of pathological material.

Dr. Robert Laird completed a study of the implantation of sheets of fascia to replace the dura in operations on the brain. His thesis on the subject was accepted on his candidacy for the degree of Master of Surgery.

Dr. A. W. Farmer has continued his studies of the repair of tendon sheaths in injuries of the hand.

Dr. Stuart Gordon is still engaged in the study of gastric movements and has completed experiments which indicate the importance of the contraction of the muscularis mucosa.

The Surgical laboratory recently established in the Banting Institute is now in working order and is proving of great assistance to the department in the preparation of pathological material, in photography and microphotography and in the preparation of lantern slides for teaching.

It is the policy of the department to encourage members of the staff to visit other clinics and hospitals both at home and abroad. This year ten of the younger surgeons have visited important surgical centres in Canada and the United States and Dr. R. M. Janes visited the radium centres of England, Sweden and Denmark, for the purpose of studying the place of radiotherapy in the treatment of cancer of the breast. Dr. K. G. McKenzie is at present attending the meeting of the International Society of Neurology in London where he is reading a paper on his original idea of severing intracranially the vestibular portion of the eighth nerve for the relief of Méniere's disease.

During the year important papers containing original contributions were read by Dr. D. E. Robertson and Dr. J. L. McDonald on sympathectomy; by Dr. R. I. Harris on the value of sympathectomy in stimulating the growth of paralyzed limbs; by Dr. H. W. Wookey on a method of excision of carcinoma of the pharynx; by Dr. R. R. Graham on gastric and duodenal ulcer and by Dr. J. C. McClelland on A Method of Anchoring Floating Kidney by Strips of Fascia.

Report on Research in the Faculty of Dentistry

Research has been proceeding in every department of the Faculty. In periodontology and dental pathology, Dr. Harold K. Box has been giving special study to the relationship of oxygen in the tissues to certain pathological conditions, and both Drs. H. A. Cominsky and J. F. Reynolds have been assisting in research in this department, the former giving particular attention to the causes and development of so-called "dry sockets" following the extraction of teeth.

Dr. E. C. Purdy, along with Miss D. J. Berry, is assisting Dr. Arthur Ham in research upon the relationship of certain hormones to calcium metabolism. This research for the coming year will be financed through a grant which has been received from the Canadian Dental Association.

Dr. R. L. Twible proceeded during the year with his study of stainless steel and its use as a denture material, and Dr. F. M. Lott, in association with other members of the Faculty, gave special attention to the physical, chemical and pathological factors involved in the use of glass as a denture material.

School of Engineering Research, Faculty of Applied Science and Engineering

The appropriation to the School of Engineering Research for the past academic year was $3300.00. This sum was devoted to researches under the direction of six members of the staff. Other researches not receiving financial assistance have also been carried to further stages of development.

Members of the staff are very desirous of undertaking the investigation of important problems, but are prevented from doing so by the pressure of teaching duties and the inability to employ research assistants, owing to the smallness of the sum set apart for research in this Faculty. It is hoped that in the near future a larger amount may be available for research, so that this very important function of the Faculty may receive a satisfactory degree of attention.

Following is a list of investigations in progress during the year.

Department of Civil Engineering

Under the direction of Professor C. R. Young

(with W. B. Dunbar)

Lateral support of steel columns and struts. The work of analysis of the test results obtained in connection with this investigation has been carried a stage nearer completion and the final report will be completed very soon.

(with M. W. Huggins)

Thrusts of arches with two and three hinges. The final checking of the results of this investigation was completed and a paper has now been published (Bulletin No. 148 of the School of Engineering Research).

Under the direction of Professor T. R. Loudon

Two researches are in progress:

(1) Mathematical investigation of hydraulic jump.
(2) Photoelectric investigation of shear distribution in simple footings.

Department of Mining Engineering

Under the direction of Professor H. E. T. Haultain

(with I. J. W. Johnston)

The work of previous years on size analyses of finely crushed ore and the viscosity of ore pulps has been continued with definite progress. Johnston has been paid as the Nipissing Mining Company Research Fellow, and the apparatus has been paid for by Professor Haultain. Apparatus for size analyses down to 10 microns has been developed to the practical useful stage.

The apparatus previously reported for the concentration of small quantities of extremely fine material has been further developed and simplified and brought to a practical useful stage.

These two pieces of apparatus open up new fields of research work of use to the industry.

Under the direction of Professor F. C. Dyer

The research on the cleaning of seeds has progressed favourably. Improvements in reagents and technique have increased the efficiency of separation of the flotation process and made possible the successful treatment of some seeds which otherwise are below the accepted grade. Work will continue in an attempt to accomplish the difficult separation of Dodder seed from clover seed.

Under the direction of Professor J. T. King

An extensive research which has been in progress for some time, on the influence of cupels on the loss of silver in fire assays has been completed and published.

Department of Mechanical Engineering

Under the direction of Professor R. W. Angus

Analytical study of the effect of water hammer in pipe lines and pump discharge lines. The subject is an important one, as the danger from bursting pipes in water works systems, power, plants, etc., is very great.

Experimental study of water hammer and its effect on the type of water piping used in homes and factories. This had to be discontinued for lack of suitable equipment.

(with L. E. Jones)

An experimental and theoretical study of the hydraulic jump and its effect on open chemical flow. This research is still in progress, and has involved a very long and careful series of studies.

(with G. R. Lord)

An experimental and theoretical study of cavitation in hydraulic piping and machinery such as turbines and pumps. Cavitation has been the source of much trouble and expense to power companies and it is receiving a great deal of attention at present in various laboratories. This work is progressing very well.

School of Architecture

Under the direction of Professor E. R. Arthur

(with F. G. M. Winter)

A paper, accompanied by photographs and drawings, on the Old Forts of Ontario, has been prepared by Mr. Fritz Winter, Davis Scholar from Germany. This has been published as Bulletin No. 146 of the School of Engineering Research.

Department of Engineering Physics

Under the direction of Professor K. B. Jackson

A research on photo sensitometry is in progress.

Department of Chemical Engineering

Under the direction of Professor J. W. Bain

(with R. L. Glover)

The action of carbon bisulphide and aqueous potassium hydroxide on lignin has been investigated. Some new high molecular weight derivatives containing sulphur have been isolated.

Under the direction of Professor M. C. Boswell

(with several students)

The yield of oxalic acid in the fusion of cellulose with sodium hydroxide has been further increased. Work on the translation of this process from a laboratory scale to a large scale for the purpose of determining whether it is suitable for industrial use has been commenced.

(with J. F. Reid)

Work was commenced on the utilization of peat in the preparation of catalysts for the stimulation of plant growth.

(with W. H. Rapson and G. T. Eaton)

The investigation of the capacity of oil-water emulsions for catalysing certain reactions has been commenced.

Under the direction of Professor E. G. R. Ardagh

(with W. H. Bowman)

The investigation on the removal of thiophene from benzene has been concluded and a paper embodying the results has been published.

(with W. H. Bowman)

A research on the mechanism of the corrosion of iron in sodium chloride solutions is in progress.

Under the direction of Professor E. A. Smith

(with G. V. Jansen)

An investigation of the adsorptive properties of silk and their relation to the fibre structure has been in progress for the past four years. This is not only of scientific interest, but possesses value for the silk finishing industry. Two papers dealing with the subject will be published in the near future.

Under the direction of Professor R. R. McLaughlin

(with L. E. Oakley)

The synthesis of pseudo opianic acid was attempted. An extension of the existing semi-micro method for estimating carbon and hydrogen in compounds containing nitrogen was commenced.

Department of Electrical Engineering

Under the direction of Professor H. W. Price

The investigations on certain regulatory mechanisms for use in electric generator stations has reached the stage where the method has been put into successful operation in one of the large generating plants of the Ontario Hydro Electric Power Commission. In recognition of the high merit of this achievement Professor Price had the honour of being awarded the McCharles Prize.

Department of Metallurgical Engineering

Under the direction of Professor R. J. Montgomery

The study of the temperature of plastic flow, the coefficient of elasticity and the thermo expansion of the fractory bodies, was continued throughout the year, and a paper has been prepared for publication.

(13) PUBLICATIONS

FACULTY OF ARTS

Department of Anthropology

McIlwraith, T. F.—*Recent Publications Relating to Canada: IV. Ethnology, Anthropology and Archaeology.* (Canadian Historical Review, Vol. XVI (I), March, 1935, pp. 111-122).

The Effects of Civilisation on the Coastal Indians of British Columbia. (Proceedings of the Fifth Pacific Science Congress; Toronto, 1934: Vol. IV, pp. 2897-2901).

DEPARTMENT OF ARCHAEOLOGY

White, W. C.—*Tombs of Old Lo-Yang. A record of the construction and contents of a group of Royal Tombs at Lo-Yang, Honan, probably dating 550 B.C. Some hundreds of objects from these tombs are now deposited in the Royal Ontario Museum of Archaeology.* (Kelly & Walsh, Ltd., Shanghai. Quarto, pp. xxii; 177. 187 plates and 15 illus.).

Chinese Home Life 1800 Years Ago. (Illustrated London News, July 28, 1934).

When Confucious was a Babe. (Illustrated London News, November 3, 1934).

The Richest Archaeological Site in China. (Illustrated London News, March 23, 1935).

Sacrificial Knives and Weapons from Ancient China. (Illustrated London News, April 20, 1935).

Did China Originate the Animal Style in Ancient Art? (Illustrated London News, May 18, 1935).

DEPARTMENT OF ASTRONOMY

Millman, P. M.—*An Analysis of Meteor Spectra, Second Paper.* (January, 1935, as part 7, vol. 82, Annals of the Harvard Observatory).

Meteor News. (Journal of the Royal Astronomical Society of Canada).

DEPARTMENT OF BIOLOGY

Craigie, E. H.—*Multilaminar cortex in the dorsal pallium of the emu, (Dromiceius novaehollandiae).* (Psych. en Neur. Bladen (Amsterdam). Jaarg. 1934, Feestbundel Kappers, pp. 702-711. July, 1934).

The cerebral hemispheres of the kiwi and of the emu (Apteryx and Dromiceius). (Journal of Anatomy, (Cambridge) April, 1935).

The hippocampal and parahippocampal cortex of the emu (Dromiceius). (Jour. Comp. Neur. (Philadelphia), vol. 60, no. 3, June, 1935).

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What of the Predator? (Proceedings Fifth Pacific Science Congress, 5, pp. 4079-4080).

The white-tailed Jackrabbit in Manitoba. (Canadian Field-Naturalist, September, 1934).

Are partridge doomed to disappear again? (Rod and Gun, November, 1934).

Harkness, W. J. K.—*The Role of Insect Life in Ontario Streams and Lakes.* (The Canadian Entomologist, Vol. LXVII, No. 3, pp. 43-46, March, 1935, Orillia, Ontario).

Huntsman, A. G.—*Herring and water movements.* (The James Johnstone Memorial Volume, pp. 81-96, Liverpool, 1934).

Refrigeration in nature. (Refrigeration and Air Conditioning, Vol. 1, No. 3, March, 1935).

Factors influencing return of salmon from the sea. (Transactions of American Fisheries Society, Vol. 64, pp. 351-355, 1934).

The problem of control in aquiculture. (Transactions of American Fisheries Society, Vol. 64, 1934).

Ide, F. P.—*The effect of temperature on the distribution of mayflies in a stream* (Univ. Toronto Stud. Biol., publ. Ont. Fish. Res. Lab. 50, 1935).

Post embryological development of Ephemeroptera (Mayflies). External characters only. (Can. Jour. Research, Vol. 12, (4) 1935).

Marchant, E. H. J.—*The Estimated Number of Nemos in the Soils of Manitoba.* (Canadian Journal of Research, November, 1934).

Piersol, W. H.—*Abstracts.* (Biological Abstracts, Vol. 8, Nos. 5, 7, 8, 9, Vol. 9, No. 3).

Walker, E. M.—*The nymphs of Aeschna juncea americana L. and A. subarctica Walk.* (Can. Ent. LXVI, 1934, pp. 267-274).

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Bannan, M. W.—*Origin and cellular character of xylem rays in Gymnosperms.* (Bot. Gazette, Vol. 96, December, 1934).

Seasonal wounding and resin-cyst production in the Hemlock—Tsuga Canadensis (L.) Curr. (Annals of Bot., Vol. XLVIII, October, 1934).

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Cain, Roy F.—*Sphaeriales in Ontario.* (University of Toronto Studies, Biological Series No. 38, pp. 1-126, November, 1934).

Cormack, R. G. H.—*Investigations on the development of root hairs.* (New Phytol., Vol. XXXIV, No. 1, February, 1935).

Dearness, J.—*Poisoning due to Amanita cothurnata.* (Mycologia, New York, January, February, 1935).

Fitzpatrick, R. E.—*The ontogeny of the peach leaf.* (Trans. of the Royal Can. Inst. 20 (1), 1934).

Further studies on the parasitism of Taphrina deformans. (Scientific Agriculture 15, pp. 341-344).

Hamly, D. H.—*The light line of Melilotus alba.* (Bot. Gaz., Vol. 96, No. 4, June, 1935).

Hildebrand, A. A.—*Recent observations on strawberry root rot in the Niagara Peninsula.* (Can. Jour. of Research, 11, pp. 18-31, 1934).

Root rot of ginseng in Ontario caused by members of the genus Ramularia. (Can. Jour. of Research, 12, pp. 82-114, 1934).

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Department of Chemistry

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Dissociation Constants for Hydrogen Sulphide and Sulphur Dioxide. (Zeit für Elektrochemie, 40, p. 889, 1934).

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DeWitt, N. W.—*A Brief World History.* (Toronto, The Macmillan Company of Canada, Limited).

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Woodhouse, A. S. P.—*Mr. Belloc judges Milton (Toronto Saturday Night)*

Puritanism and Liberty. (Univ. of Toronto Quarterly, Vol. IV, No. 3).

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Department of French

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Glazebrook, G. deT.—*Roads in New France and the policy of expansion.* (Report of the Annual Meeting of the Canadian Historical Association, Toronto, 1935).

British Empire Migration. (Pacific Affairs, December, 1934).

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The Railway Land Grant System in Western Canada. (Report of the Canadian Historical Association, 1934, pp. 73-79).

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Goggio, E.—*The Sources of Longfellow's Michael Angelo.* (The Romanic Review, Vol. XXV, No. 4, October-December, 1934).

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The Criminal Responsibility of Lunatics. (Ontario Journal of Neuro-Psychiatry, November, 1934).
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Mistake in the Law of Contract. (1 University of Toronto Law Journal, pp. 217 ff.).
The Principles of Criminal Law. (1 University of Toronto Law Journal, pp. 219 ff.).
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The Constitutional Law of Canada. (3 South African Law Times, pp. 157 ff.).
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THE UNIVERSITY OF TORONTO QUARTERLY

During the past year the QUARTERLY, now in its fourth volume, has made very satisfactory progress.

The general lines of its policy were developed by Professor G. S. Brett in his editorship of volumes I and II, and from these there has been no conscious or marked departure. We have discontinued the printing of verse, substituting therefor a new section of review-articles on significant books of general interest, with due emphasis on works written by members of the University. For these latter we have selected as reviewers noted authorities in their fields and have asked them to use complete freedom in their criticism. With the valuable assistance of Professor A. Brady we have extended the QUARTERLY's scope as a vehicle of the non-partisan discussion of public questions, with special reference to Canada. We have further inaugurated a series of articles on the special equipment and work of the University in selected fields. Finally, we have devoted a portion of our space to articles by European and American writers of note, including the Archbishop of York, Mr. Paul Elmer More, and Professor Cazamian. Of the last-named writer's article on Bergson, Mr. Bergson himself spoke as "the most penetrating and profound" treatment of his religion and ethics which had yet appeared.

Despite the difficulties encountered by periodicals during the depression, the subscription receipts of the QUARTERLY have this year increased by 50 per cent. It is now available in all the great libraries of Europe and America, and for sale in most of the larger centres. Its articles are listed in all the leading indices and current bibliographies.

(14) REPORT OF THE DIRECTOR OF UNIVERSITY EXTENSION AND PUBLICITY

(W. J. Dunlop, Esq., B.A., B.Paed.)

In University Extension there is no monotony. New requests for adult education facilities, new developments of some kind, are so frequent that new problems are ever clamouring for solution. The citizens of Ontario realise more fully than ever before that the University of Toronto is their property and that it is the greatest single asset in their possession. Mature men and women are seeking education as they never did before and, in yearly increasing numbers, they look to their own University to supply their needs in this respect. University Extension does not duplicate nor overlap the educational services supplied by Departments of Education or other public institutions; it remains strictly within its own sphere and there finds ample room for the exercise of its normal activities.

The most substantial, the most fruitful, means for providing adult education is the evening class, meeting regularly once a week throughout the session, attended by the same mature students, covering in unhurried fashion a definite prescription of work. Of such classes there have been, during this academic year, three types.

(*a*) Teachers' Classes provide instruction in the subjects of the Teachers' Course which is an adaptation of the pass course in arts, with the same instructors, the same standards, and the same examinations as the pass course but with fewer options. Not all the students in these classes are teachers—some are librarians, business men, housewives, and there was one physician this year. There were 325 men and 125 women. 7 teachers, and others graduated with the degree of Bachelor of Arts in November and 21 in June. Nearly half of these had taken instruction in the summer session.

(*b*) Evening Tutorial Classes were conducted for men and women who wish to obtain knowledge for its own sake. There are no entrance requirements, no examinations, no certificates, degrees, or diplomas. The attendance in these classes increased from 1802 last year to 3045 this year. The subjects of instruction were: accounting, advertising, economic diagnosis, appreciation of music, art, astronomy, business organisation, chemistry, English composition, cost accounting, current events, economics, English diction, English fiction, Esperanto, conversational French, German, investments, Italian, journalism, mercantile law, modern history, oral interpretation of literature, parent education, philosophy, physics, psychology, public speaking, science and law for purchasing agents, secretarial practice, social laws, Spanish, current world affairs. In some of these subjects there were two, three, or four distinct classes. For next year a class in lip-reading for adults has been approved by the Committee on University Extension.

(*c*) Workers' Educational Association classes were in operation in Toronto, Hamilton, Mountain Sanatorium, London, Kingston, Windsor, Oakville, St. Catharines, Brantford, Kitchener, Woodstock, Galt, Preston, Stratford, Peterborough, and farmers' classes in Keene and Gamebridge. The enrolment was 1880 this year, an increase of 282. The subjects of instruction were economic history, economic theory, psychology, English literature, English composition, public speaking. To these classes only manual workers are admitted and those who are unemployed pay no fee.

In the Summer Session there were 257 men and 118 women taking the Teachers' Course, courses for prospective "specialists", and courses in pedagogy. Teachers who live so far from the University that they cannot take advantage of the classes provided in the evenings during the regular session are provided with instruction in the summer. The new regulation made by the Department of Education which requires teachers to complete one "year" of university work in order to be eligible for a permanent professional certificate has already produced a large increase in the number of applications for the Summer session of 1935.

Our oldest form of service, the university extension lecture continues to hold its place in the public favour. Though the past few years showed a slight decrease in the number of these lectures, the tide has turned and this year 196 of these lectures were delivered, an increase of 58 over last year. These were distributed as follows: Bowmanville, 7; Brantford. 3; Cobourg, 4; Collingwood, 1; Cornwall, 1; Fenelon Falls, 1; Grand Valley, 1; Guelph, 5; Hamilton, 9; Harriston, 1; Kingston, 1; Kirkland Lake 1; Kitchener, 4; Lambton Mills, 1; Lindsay, 1; Listowel, 4; London, 3; Montreal, 1; New York, 1; Niagara Falls, Ontario, 1; Niagara Falls, New York, 7; North Bay, 2; Oakville, 1; Orangeville, 1; Orillia, 4; Oshawa, 1; Ottawa, 2; Perth, 1; Peterborough, 7; Port Colborne, 3; Port Hope, 1; St. Catharines, 11; Sarnia, 2; Scarboro, 1; Simcoe, 2; Stratford, 8; Toronto, 90; Woodstock, 1.

The members of the staff who gave university extension lectures this year are as follows: W. J. Dunlop, 43; Professor N. A. MacKenzie, 28; Dr. K. H. Rogers, 13; W. R. Wees, 12; Dr. W. E. Blatz, 8; Professor E. Goggio, 7; Dr. A. Brady, 6; Professor S. N. F. Chant, 5; Mrs. John Creighton, 5; Dr. Norma Ford, 5; Dr. W. C. White, 5; Dr. R. K. Arnold, 4; K. S. Bernhardt, 4; Dr. V. Lange, 4; J. Campbell McInnes, 3; Dr. P. M. Millman, 3; Professor G. W. Brown, 2;

Professor J. Cano, 2; Mrs. John Davidson, 2; Professor G. W. Knight, 2; Arthur Lismer, 2; E. W. McInnis, 2; Dr. R. M. Matthews, 2; Professor A. F. W. Plumptre, 2; Professor John Alford, 1; Professor C. A. Ashley, 1; Dr. F. L. Barber, 1; Dean G. S. Brett, 1; Professor E. K. Brown, 1; Dr. L. C. Coleman, 1; Dr. T. J. Crawford, 1; Professor H. J. Davis, 1; Professor A. T. DeLury, 1; Professor R. D. C. Finch, 1; Professor G. P. de T. Glazebrook, 1; Miss M. Fleming, 1; Professor H. J. C. Ireton, 1; Professor G. E. Jackson, 1; D. C. McGregor, 1; Professor T. F. McIlwraith, 1; Professor L. A. MacKay, 1; Dr. S. A. B. Mercer, 1; Professor J. F. Parkinson, 1; Dr. F. A. Smith, 1; Dr. T. M. Taylor, 1; Dr. W. R. Taylor, 1; Dr. J. O. Wilhelm, 1; Dr. H. Willan, 1; C. W. Woodside, 1.

For two weeks in the autumn a course was carried on for thirty-six young men and four young women who live and work on farms in Ontario and who are leaders of discussion groups engaged in studying the causes and the possible remedies for the present distress in rural districts. The course was arranged by the Workers' Educational Association and the staff of the department of economics provided the instruction. At the close of the course each student wrote a short essay giving his or her impressions of the value of the project. Unanimously they declared that they had obtained so much real information that they had lost the prejudices which they had thought to be knowledge and that they would continue to study for the rest of their lives. To follow up this experiment, mimeographed bulletins on economic topics are now in course of preparation and these will be supplied to the members of rural study groups, with lists of suitable books. If the number of study groups should be large, it may be possible to use the radio for lectures which will co-ordinate and augment the material provided in the bulletins.

For some years this Department has provided correspondence courses and has assisted in the arranging of examinations for the Canadian Credit Institute and the Chartered Life Underwriters' Association. Recently the Association of Accountants and Auditors in Ontario and the Chartered Institute of Secretaries have asked for the same service and the Committee on University Extension has authorised compliance with their requests. In this way opportunities are provided for young men and women who are ambitious to obtain specialised education and to improve their professional status.

A new venture which gives promise of important development in the future was the establishment, at the request of a group of federal civil servants, of a class in public administration in Ottawa. This class consisted of thirty-two earnest students who made remarkable progress.

The series of special lectures in the Collegiate Institutes of York Township drew large audiences but the experiment did not quite realise the expectations of its sponsors. The attendance varied from two hundred to eleven hundred (in the three schools) on different evenings but was not sufficiently constant to produce the results which are to be seen in regular evening classes.

In co-operation with the School of Nursing, three refresher courses were held: one for industrial nurses, one for public health nursing supervisors, and one for hospital staff nurses. These short courses are greatly valued by the nurses who take advantage of them: they provide an opportunity to keep abreast of the newest ideas and promote the development of a good professional spirit.

The two-year diploma courses in Occupational Therapy and Physiotherapy were carried on, with thirteen young women in the first year of each course and seven in the second year in physiotherapy. By means of these courses, the University is not only training young women for important and necessary public service but is opening up new careers which were practically unknown a few years ago. The standard of these courses is high and is being strictly maintained.

Correspondence courses in upper school and commercial subjects were carried on as in previous years. These courses are intended for teachers who wish to improve their academic qualifications.

The total enrolment in continuous courses and classes was 5,825. The number of instructors was 236.

This Department co-operated, as in former years, with the National Council of Education, in arranging for lectures, in Convocation Hall, and in other university halls, by distinguished visitors from the British Isles. Many other public lectures were arranged and in all cases there were good audiences.

Through the courtesy of the Canadian Radio Broadcasting Commission, it was possible to provide the weekly talk on books by Professor J. F. Macdonald which has become a particularly popular feature, a series of fourteen lectures on modern architecture, a few lectures on adult education and on general topics, and the inter-university undergraduate debates.

Perhaps it is safe to say that never has the University received so much favourable publicity as during the academic year now closing. Newspapers from coast to coast have carried many columns of university news; magazines and periodicals have published many articles describing features of the University's work and its progress; stories of bequests and of the successful achievements of members of the staff and students have been eagerly sought by newspapers and have been promptly published.

As a result of the Symposium on Adult Education held in Convocation Hall last year, the Canadian Association for Adult Education has been organised and incorporated with a charter membership of forty-eight organisations and eleven individuals not connected with definite associations. Now the adult educational activities of the Dominion can be co-ordinated as has been done in other countries by the World Association for Adult Education, the British Institute of Adult Education, the American Association for Adult Education, the Newfoundland Association for Adult Education, and many others. This Department is a charter member of the new association and the prospects are that University Extension will develop even more rapidly and extensively as a result of the co-ordination of effort among universities and other agencies which the Canadian Association for Adult Education will make possible.

(15) REPORT OF THE ACTING DIRECTOR OF DEPARTMENT OF SOCIAL SCIENCE

(Professor E. J. Urwick, Acting Director)

The number of students enrolled in the Department again shows a small increase. There are at present 79 students working for the diploma, and 34 taking special courses. The proportion of graduates also continues to increase: rather more than two thirds of those now enrolled hold an Arts Degree. It is interesting to note that these represent every Province in Canada, and almost every University. This is indicative of the fact that Toronto is now recognised as the "natural" centre for the training of social workers, partly because this University alone has maintained for some twenty years a well-equipped department of specialised teaching, and partly because the City of Toronto offers unique opportunities for practical field work. Most of the students from other parts of the country return as graduates to take up responsible work in their own provinces.

Our relations with both government and voluntary agencies continue to be most cordial. The Provincial Departments of Welfare and Health and the City Department of Welfare have given most valuable help in the practical training of our students: and our debt to all the Voluntary Agencies grows greater each year. Without this gracious co-operation much of our work would be impossible.

We are also indebted to the Ministers of Welfare and of Education for very valuable suggestions in regard to the content and aim of our courses, and encouragement in regard to future possibilities for our graduates. We hope to be able to improve our teaching by adopting the suggestions offered.

(16) REPORT OF THE DIRECTOR OF THE SCHOOL OF NURSING

(Miss E. K. Russell)

This School is engaged now upon two pieces of work that are so distinct, the one from the other, that it seems advisable to report upon these separately as follows: A. Undergraduate work, i.e., the training course in Nursing; B. Studies for graduate nurses.

A. *Undergraduate Work.* This new training in nursing is three years in length and is planned so that it includes preparation for both hospital nursing and public health nursing. As the first class was enrolled in September 1933, we are now drawing to the end of the second year of this work which means that two classes of pupils are in the School, of which classes one has had two years of training while the other is just finishing a first year. As the practical training for these pupils is received partly in the wards of various hospitals, and partly in connection with various public health organisations, it is an intricate piece of work that has been started and many adjustments must be made in order to shape this course into a well-integrated whole.

We are able to report that applicants of sufficiently good calibre have presented themselves—so that satisfactory classes have been enrolled—and also that it has been possible to arrange the content of both the first and the second year of training fairly satisfactorily. While many difficulties have arisen, these have been met and overcome reasonably well. It is highly desirable that this report should be conservative and cautious in its utterance but it is difficult to keep from it a note of satisfaction, not so much with accomplishment as with the apparent possibility of accomplishment. Some rather startling results appear to follow from the methods that the School has been able to adopt. It would seem that, given certain conditions, the three years that are spent customarily for a training in nursing may be made to yield more of pleasure and of profit than it has been usual to expect! Also there is increasing evidence to support the hope that the nurse who emerges from this School may make a really desirable worker for the public health field: and this is an aspect of the new training which is being watched with the greatest care.

B. *Studies for Graduate Nurses.* There is a great demand for this type of work and the School is able to select candidates from a large number of nurses who apply from far and near. These students fall into two groups, namely, those who are preparing for the public health field and those who are preparing for staff work in hospital. At present the studies that are offered are rather elementary in character, but it is hoped that gradually these can be given more of depth and of substance as students present themselves from a type of undergraduate training that fits them for more substantial post-graduate study. During the past year a slight advance was made in the character of this post-graduate work.

The statistical report for the year is as follows:

Pupils in the 1st year of the new three-year course	10
Pupils in the 2nd year of the new three-year course	8
Nurses in the fourth year of the four-year course in public health nursing. (This course has been discontinued in favour of the new three-year course but a few candidates remain to finish under the earlier arrangement)	6
Graduate nurses in the certificate courses	49
Special students from foreign countries not enrolled in certificate courses	12
Occasional students, including undergraduates from Toronto Hospitals	132
Nurses enrolled in refresher courses	106

With the development of this new work has come the need for further help on the teaching staff. Hence there have been adjustments and additions during the past twelve months, in consequence of which we now have as new members of the staff, Miss Mary Millman who has had several years of experience with the Toronto Department of Public Health, and Miss Dorothy M. Percy who

brings to her work a valuable experience with hospital staff work and also with visiting nursing, having come directly from the national office of the Victorian Order of Nurses. During the year Miss E. M. Stuart, after several years of teaching and supervisory work at the Toronto General Hospital, (and more than a year as a part-time instructor in this School) has been transferred to our regular staff.

The School residence has been filled to its rather limited capacity throughout the year. With the past year's increase in regular (i.e., full-time) students, it has been difficult to meet the most pressing needs of all with the very limited accommodation that must serve for both School and residence purposes. It would be well if this accommodation could be increased immediately.

(17) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF MILITARY STUDIES

(Brig.-Gen. G. S. Cartwright, Director)

I have the honour to report as follows upon the work carried out in this department during the academic year, 1934-35.

The attendance and interest shown by the students during the sessions continued to be very satisfactory and was encouraging.

In order to make the principles of the distribution of platoons and small bodies of troops easier to understand, exercises on the sand table were carried out more frequently this winter and there can be no doubt as to the value of this instruction in assisting the students to visualise the reasons for the different formations, etc.

Lectures in military geography, campaigns, organisation, etc., were given as in previous years.

The enrolment for the Military Studies classes was as follows:—

I Year—6; II Year—6; III Year—8.

Classes were held for students in other Arts courses and in other faculties for whom Military Studies is not an option, but who wish to receive the instruction given in this department, with a view to writing the O.T.C. examination conducted by the War Office, London, in order to qualify for commissions in the Militia. These have been well attended, the numbers applying to write the examinations for the different branches of the Service ("A" & "B" Certificates) were as stated below:—

Artillery Cert. "A"	11	Signals Cert. "B"	1
" " "B"	5	Infantry " "A"	59
" Survey Cert. "A"	3	" " "B"	11
Engineers Cert. "A"	3	Medical " "A"	8
" " "B"	1		

Of these, 52 qualified in Part I, Practical, and sat for Part II, Written, of the tests. The report received from London shows that 41 candidates were successful at this examination.

The results of last year's examination were as follows:—

In March, 1934:—		In November, 1934:—	
Artillery Cert. "A"	5	Artillery Survey Cert. "B"	1
" Survey Cert. "A"	1	Infantry Cert. "A"	2
Engineers Cert. "A"	5	" " "B"	1
Signals " "A"	3	Medical " "B"	1
Infantry " "A"	6		
" " "B"	5		
Medical " "A"	4		

At the time of writing, information has been received that a student of this Department who held the O.T.C. Certificate "B" (both Infantry & Medical) has been given a commission in the Royal Canadian Army Medical Corps (Permanent Force).

(18) REPORT OF THE UNIVERSITY HEALTH SERVICE (MEN)

(George D. Porter, M.B., Director)

I.

The report for the year shows that there have been

Examinations

First year students	855	
Second " "	685	
Senior "	356	
	—	1896
Re-examined by specialists		16
Total		1912

Results

Those found fit for physical training	95%
Those having some disability requiring corrective or light exercises	3%
Those unfit for physical training	2%

The average age of the first year students is 19 years; their average height 5 ft. 8¾ ins. and their average weight 142½ lbs. (slightly in excess of last year).

After the examinations 29 were exempted from physical training owing to physical disability, which is an excellent showing, though not quite equal to that of last year, which was the best we have ever had.

The following conditions accounted for exemption from physical training:

Heart trouble	10	Gastric ulcer	1
Infantile paralysis	3	Asthma	1
Operations	5	Chest trouble	1
Hypertension	1	Nephritis	1
Hyperthyroidism	1	Osteomyelitis	1
Diabetes	1	Orchitis	1
Pneumonia	1	Fracture	1

Improvement in the physical conditions of second year students is shown in the majority of cases. Thirty five per cent. of those below category A. 1 in their first year had their rating raised during the year, while only five per cent., through illness or accident, had their category lowered.

Illness during the year. This year we had a large number of students handicapped by the epidemic of influenza, and a few contracted the measles which was so widely spread throughout the city, otherwise the general health of the student body was excellent.

The following are causes of absence from physical training classes for periods varying from one day to three months.

Colds	204	Local infections			24
Influenza	93	Skin diseases:			
Sore throat	23	Eczema	1		
Tonsillitis	8	Pityriasis	1		
Bronchitis	5	Furunculosis	13		
Pleurisy	3	Scabies	1		
Chicken pox	1		—		16
Measles	11	Heart trouble			1
Sinusitis	9	Renal calculus			1
Asthma	2	Adenitis			3
Lumbago	3	Appendicitis			4
Neuritis	2	Orchitis			1
Neuralgia	2	Hyperthyroidism			1
Arthritis	1	Gastralgia			10
Enteritis	1	Conjunctivitis			3
Migraine	1	Otitis media			2
Diabetes	1	Nephritis			3
Facial paralysis	1	Dental trouble			5
Vaccination	7	Epistaxis			1

Transfusions	2	Abrasions	14
Hernia	1	Burns	3
Duodenal ulcer	1	Blisters	8
Injuries:			— 114
Fractures	3	Operations	9
Dislocations	3		
Sprains	71	Total	580
Cuts	12		

In the students' consultation service in mental hygiene, under Dr. Farrar, approximately a dozen students from various faculties were seen during the year. In no case was there any untoward development.

We are pleased to report that no cases of venereal disease have come under our observation this year.

Two hundred and sixty students were enrolled in the special classes under Mr. Don. Barton for the correction of such defects as round shoulders, flat feet and spinal curvature. Some of these were enrolled for the full year, and others for periods of from one to six weeks on account of injuries or disabilities, and those recovering from illness, which prevented their taking the regular P.T.

During the year the usual large number of students came in for treatment of minor injuries received on the campus and in the gymnasium, and also for personal advice on health matters.

(18) REPORT OF MEDICAL ADVISER OF WOMEN

(Dr. Edith Gordon)

II.

I beg to present for your consideration the report of the Medical Adviser of Women for the year 1934-1935.

The physical condition of the entering students was excellent, and the health of the women in the University with very few exceptions was very good throughout the year. Physical examinations were made on 480 students. Of these, 207 were entering students who were required to take physical training. The remainder were students of other years and faculties than those requiring physical training. 20 students of the Margaret Eaton School were examined. These students were receiving some instruction within the University. A small number of students come back each year for a physical examination, and their interest in their physical condition, and their appreciation of suggestions for increasing their efficiency is one of the encouraging phases of the work of the Medical Adviser.

All students required to take physical training, reported twice a week, either to the gymnasium for the regular physical training classes, or the corrective classes, held in a small room in 44 Hoskin Ave., or to the medical office for special supervision. In this way careful oversight was given them, and activities or rest periods were prescribed according to the student's need.

Throughout the year a constant stream of students from all faculties and departments of the university came to the medical office for advice on various health problems, and for treatment for minor injuries and complaints. In the neighborhood of two thousand such consultations and treatments were given. It is by persuading a student to report before symptoms become obvious that much illness can be avoided, and by planning a hygienic living program with her, that increased physical efficiency can be attained. The women students are appreciating these facts with gratifying results.

The addition of the intracutaneous tuberculin test to the physical examination of the entering students was made in 1933. It has been continued during the past year, and an X Ray of the chest of those giving a positive reaction has been urged. By this means several students were brought under closer observation. These students had suspicious but not definitive findings of tuberculosis

on X-Ray, but no signs nor symptoms of the disease. Their condition throughout the year continued satisfactory, and none were obliged to leave college.

The women who participated in the various sports were examined before playing. Students whose physical condition was unsatisfactory at the initial examination, or who were having corrective gymnastic exercises, were re-examined during the year. The examinations bring to light quite a number of correctable defects, and a considerable amount of poor personal hygiene. The means for changing to better ways is pointed out, and on the whole the co-operation of the students in this regard is very gratifying.

46 vaccinations were performed on students who had failed to meet the university requirement in this regard. Several Shick and Dick tests performed, and the administration of diphtheria toxoid and scarlet fever toxin to those showing positive reactions was made.

During the final examinations in May, the medical office was very busy with students who through illness were unable to write their papers in the regular examination halls, and were permitted to write under the supervision of the Medical Adviser. 113 examinations were written in the medical office.

Lecture courses were given by the Medical Adviser in the Diploma in Physical Education course. In the first year, two hours weekly in personal hygiene and first aid and emergencies were given. In the second year, four hours weekly were given in anatomy in the department of anatomy through the courtesy of Dr. Grant. The first year students of the Margaret Eaton School shared these lectures. In the fourth year, fifteen lectures in physical diagnosis were given. In addition, three health talks were given at the beginning of the year to the entering students, and four lectures in personal hygiene to the Public Health Nurses in March.

The pressing needs for increased space for the physical training requirements and athletic activities becomes more obvious each year. Only the entering year can be provided for. Too large classes for the space available, and inadequate accommodation in every regard make the work of the Physical Education department a very trying one. The corrective classroom is altogether too small, and is inconveniently situated. Space sufficient for two years of physical training, and a corrective gymnasium large enough to care for the needs of all those requiring special exercises are essential. For the sports of basketball, baseball and badminton, floor space sufficient for practices and games should be found within the university. It is to be hoped that this will be forthcoming in the near future.

Physical Examinations, 1934-1935

University College (entering)	176
University College (others)	28
Victoria College	14
Trinity College	16
St. Michael's College	22
Household Science (entering)	20
Household Science (others)	2
Medicine (entering)	8
Medicine (others)	2
Applied Science and Architecture	1
Dentistry	2
Public Health Nurses	49
Ontario College of Education	80
Social Science	21
Occupational Therapy	7
Physio Therapy	3
Graduate students	7
Special and Occasional	2
Margaret Eaton School	20
Total	480
Number required to take Physical Training	207
A1 and A2 (physically fit to participate in physical training)	175
B1 (requiring corrective gymnastics)	17
B2 and C (unfit to participate in physical training)	15

(18) REPORT ON ATHLETICS AND PHYSICAL TRAINING

(T. A. Reed, Secretary, Athletic Association)

III.

Compulsory Physical Training

This was carried on under the supervision of Mr. Donald Barton and his assistants and followed the lines laid down in former years. In addition to the Danish fundamental gymnastics, variation was given to the work by the introduction of elementary apparatus work and special gymnasium games.

While physical work is compulsory under the regulations of the Board of Governors, every effort is made by the Athletic Directorate to offer opportunity for the student to enter some form of competitive sport. The following schedule shows that this is appreciated.

Men students enrolled in the first and second years		1784
From third and fourth years (being deficient in previous years)		12
From Wycliffe College		1
		1797
From this total must be deducted those		
(*a*) With credit for two years physical training but repeating academic work	236	
(*b*) Exempt on medical and other grounds	68	
(*c*) Withdrawn from college during the session	23	
(*d*) Registration cancelled	9	
		336
		1461

These 1461 elected to take their Physical Training as follows:

In Physical Training classes	1031
In the Canadian Officers' Training Corps	180
In the corrective classes	234
In the following Intercollegiate & Interfaculty sports (part time):	
Rugby Football	131
Soccer Football	42
Track	21
Harrier	4
English Rugby	13
Basketball	138
Hockey	101
Indoor Baseball	97
Boxing, Wrestling and Fencing	102
Swimming and Water Polo	58
Gymnastics	20
Lacrosse	45
Volleyball	67
Failed to register in Physical Training	16
	2300
Less those in two or more activities	839
	1461

General Physical Training—The work of the department was carried on by Mr. D. M. Barton, Chief Instructor, and Messrs. W. H. Martin, J. E. McCutcheon and W. W. Winterburn. Compulsory Physical Training classes numbering 1047 were held or 45 weekly. Of these there were devoted to special corrective work, 507 classes in which 142 men were enrolled, together with some 92 who entered from time to time for special attention. These were conducted entirely by Mr. Barton, a recognised specialist in remedial exercises.

In the various branches of athletics the following were enrolled:

Class	Enrolled	Weekly Periods	Total
Boxing	50	7	116
Wrestling	60	7	133
Fencing	80	5	118

Gymnastics	35	3	72
Indoor Track	30	2	30
Basketball	290	40	883
Indoor Baseball	245	16	252
Lacrosse	111	12	150
Learn to Swim	193	13	295
Life Saving	308	22	407
Water Polo:			
Interfaculty	93	18	32
Intercollegiate	30	3	25
Swimming:			
Interfaculty	112	10	100
Intercollegiate	20	3	54

Worthy of special mention is the increasing interest in Fencing and the large response to the first call for enrolment in the "learn-to-swim" and life saving classes; 193 in the former and 308 in the latter. Of these last, 133 received the award of the Royal Life Saving Society.

Intercollegiate Athletics—In these, Toronto held her own and won the senior titles in English Rugby, Harrier, Rowing, Basketball, Swimming and Gymnastics and the Intermediate championship in Basketball. The Hockey, Boxing, Fencing, Wrestling and Basketball teams made their annual trips to the neighboring Republic and gave a good account of themselves. 23 teams represented the University, 287 contestants wearing the Varsity colours. Some of them, 29 to be exact, taking part in more than one activity.

Interfaculty Athletics—Increased activity and interest was again shown in this most important branch of our athletic work and the handsome trophies, donated from time to time by friends of the University, were well contested. The famous Mulock Cup, given by our venerable Chancellor some 41 years ago, was won by the Dental team for the first time since 1918, while Victoria College captured no less than four championships.

Series	Name of Cup	Winner	Inter-faculty Teams	Players
Rugby	Sir Wm. Mulock	Dent.	10	264
Track	W. L. Rowell Memorial	Ap.Sc.		49
Soccer	Arts Faculty	Ap.Sc.	9	126
Harrier	J. Brotherton	Wycliffe		53
Hockey	W. T. Jennings	Victoria	13	169
Basketball	Clifford Sifton	Victoria	19	218
Lacrosse	Dr. W. A. Dafoe	Jr. Ap.Sc.	10	120
Boxing, Wrest. & Fencing	Francis Davison	Med.		45
Indoor Baseball	A. G. Spalding & Co.	Victoria	16	229
Swimming	A. M. Fitzgerald	Trinity	6	46
Water Polo	H. P. Eckardt	Victoria	9	102
Indoor Track	Toronto Cricket Club	Ap.Sc.		30
Tennis	F. Y. McEachren	A. H. Crowson, Dent. IV		52
Gymnastics	H. A. Wilson	Trinity		12
Volleyball	Victoria College Staff	U.C.	15	165
			107	1680
Less those in two or more activities				696
Number of contestants				984

A new trophy was presented this year by friends of the late John C. H. Copp, to be held each year by the member of the senior Rugby team adjudged worthiest by his team mates. It was awarded this year to Mr. J. R. Coulter of the graduating class in Arts.

Special mention should be made of the use to which our Arena was put during the summer months. A venture of Mr. Reginald Stewart to provide symphony concerts each week at prices within the reach of all, met with such success that towards the end of the season between 7000 and 8000 people attended and concerts were continued until near the end of October. The proceeds over and above the actual expenses were divided equally among the 100 players

composing the orchestra and the University's contribution of this building for the purpose was appreciated alike by the orchestra and the music loving public.

The Athletic Directorate—The Athletic Directorate for 1934-35 consisted of Dr. J. A. McCollum (President), Professor M. A. Mackenzie, Professor J. F, Macdonald, Dr. W. Easson Brown, Messrs. A. H. Squires (Vice-President), G. A. Hendry, J. W. Magladery, J. H. MacPherson, F. L. Shipp, J. L. Farrar. R. A. Webber and, *ex officio*, Dr. G. D. Porter, Medical Director, Warren Stevens, Athletic Director and T. A. Reed, Financial Secretary.

(18) REPORT OF PHYSICAL EDUCATION FOR WOMEN STUDENTS

(*Miss I. G. Coventry, Director of Physical Education*)

IV.

During the session 1934-1935 there were 193 students enrolled in the physical education classes and approximately 875 class periods of instruction were given by the physical director and her assistant, Miss J. M. Forster.

Required Physical Training: The required physical training class with an enrolment of 178 students was subdivided into 16 class periods a week. This plan assisted principally in accommodating the students who presented various academic timetables and also lessened the congestion in the inadequate gymnasium quarters.

Students from University College	158
" " Faculty of Medicine	8
" " Applied Science	2
" " Household Science	10

Corrective and Remedial Classes: Class periods of corrective and remedial gymnastics were given to students who were medically advised to take the special course arranged for their welfare. This essential part of physical training was under the personal supervision of the physical director. Marked improvement was noted and reported to the medical office at the end of the session.

Four Year Diploma Course in physical education in conjunction with the pass Arts course: There were 15 students registered in the four year course in physical education and approximately 994 periods of instruction and lectures were given. Theory subjects and lectures numbered 504 and practice subjects 490.

The decrease in the number of students attending the course is due in part to the revision which now requires a higher scholastic standing and including the additional hours of class periods and lectures.

The small group of graduate students who were able to return this year to complete the fourth year of the revised course, carried on with ardent zeal and enthusiasm throughout the college year and achieved praiseworthy results in all the final examinations.

These university graduates, equipped with physical education qualifications have accepted responsible positions this summer at well established summer camps for girls.

It is noteworthy, that the women graduates who have been granted diplomas in physical education by the University of Toronto are in continued demand as full time physical directors in collegiates, technical, and high schools in Toronto and other cities of Ontario.

Swimming: There were 313 students from all colleges, faculties and departments and approximately 488 periods of instruction given by Mr. A. L. Cochrane and Miss A. Cochrane during the session of seven months.

Students from University College	153
" " Trinity "	18
" " St. Michael's "	9
" " Victoria "	66
" " Faculty of Medicine	20
" " " " Household Science	6

Administrative Staff	19
Graduate Studies	2
School of Nursing	20

(18) REPORT ON ATHLETICS FOR WOMEN

(Miss A. E. M. Parkes)

V.

During the past year, excellent competition and keen enjoyment have again been provided for a large number of women students under the auspices of the Women's Athletic Association. Although much handicapped through shortage of funds, the various activities of the association were carried out as usual, due to the generosity of certain friendly groups who contributed in one way or another.

The funds to cover the cost of the Intercollegiate Tennis tournament, held in Toronto in October, were contributed by the Women's Committee of the Students' Administrative Council, and the Men's Athletic Association provided the Arena and the Hart House pool and gymnasium without charge on several occasions. As no fee can be charged by the association due to the lack of adequate facilities for athletic competition, the other funds for the maintenance of University teams are earned by the women athletes, who operate three parking stations during the fall football games. This is made possible through the kindness of the Superintendent of Grounds.

This year the intercollegiate championships in tennis and basketball were won by Queen's University, while the hockey was held in abeyance as Queen's did not put in a team. A pleasant innovation was a friendly hockey game with the McGill team which financed its own trip to Toronto.

Interfaculty series were conducted in tennis, indoor baseball, basketball, hockey, swimming, badminton and golf—the latter a new departure financed and sponsored by the University College Women's Athletic Association. Inter-year games were also played in several of the colleges and tennis and badminton tournaments and swimming meets were organised in a number of the individual faculties.

The interfaculty record is as follows:

Series	Cup	Winner	Competitors
Tennis	Curlette Cup	St. Michael's	30 (5 teams)
Basketball	St. Hilda's Cup	St. Hilda's	125 (9 teams)
Baseball	Univ. College Cup	Victoria	35 (3 teams)
Hockey	Harston Cup	Victoria I	70 (6 teams)
Swimming	Interfaculty Cup	Social Science	35 (6 teams)
Badminton		University College	36 (6 teams)

The Athletic Directorate for 1934-35 was made up as follows: Dr. C. C. Benson, President, Mrs. W. A. Kirkwood, Mrs. W. B. Elsley, Mrs. John Westman, Miss I. G. Coventry, Dr. E. H. Gordon, Mrs. D. C. Dempster, the Misses E. M. Ardagh, J. B. Atkinson, H. J. Forbes, A. G. Gardnes, C. S. Small and A. E. M. Parkes, Financial Secretary.

(19) REPORT OF THE WARDEN OF HART HOUSE

(J. B. Bickersteth, Esq., M.C., M.A.)

I GENERAL.

The undergraduate membership in Hart House this year was three thousand eight hundred and forty-eight and the senior membership (faculty and graduate) six hundred and forty-six, making a total membership of four thousand four hundred and ninety-four which is an increase of sixty-five over that of the previous year. Special arrangements were made to take all freshmen round Hart House during the first few days of term so that they would be familiar with the building. There is no question that the House grows in its appeal to undergraduates of

every year whatever their interests may be. Important changes were made in the Great Hall at the end of January. For many weeks before this date a sub-committee of the Hall Committee had been discussing with the Comptroller the steps that could wisely be taken to meet the wishes of the undergraduates and after confirmation by the Board of Stewards and the Finance Committee it was decided to add a 20c. lunch to those already being served and to introduce a 25c. and 30c. dinner in the evening. Individual service was arranged, chairs were substituted for the benches and smoking was permitted at all meals. These changes proved extremely popular and the attendance in the Great Hall until the end of the year was very satisfactory. On the initiative of the Graduate Committee a beginning has been made in building up a collection of plate for use at the High Table on formal occasions. With the exception of the Arts (U.C.) Ball the usual social functions including the Hart House Fancy Dress Ball were held in Hart House during the winter and in view of hard times the attendance was very satisfactory. On the last Sunday in October Hart House was thrown open not only to members who wished to show their friends and relations the building but also to the general public who availed themselves of the opportunity in large numbers. In November Hart House offered hospitality to sixty young farmers who were attending a special course in the University. There is still need for closer touch between the undergraduates and the University Settlement, the boys and men of which were entertained at the usual Christmas party in December. As for many years past the Warden's Christmas dinner was held on the last day of term before the Christmas vacation and was attended by undergraduates drawn from every part of the Dominion and from many countries overseas.

During the past year Hart House lost two deeply valued friends. The death of Mr. Henry Sproatt in October removed one whose creative genius was responsible for much of the beauty of Hart House and whose continued interest in its welfare was an inspiration to all its members. Hart House itself will stand for all time as a magnificent memorial to a great Canadian architect. By the death of Dr. W. L. Grant in February Hart House was deprived of the sympathy and co-operation of one who had been intimately connected with Hart House from its earliest days and as a trustee of the Massey Foundation had taken the liveliest interest in the progress of the House. His wide experience and kindly advice so freely put at the disposal of all members of Hart House can never be replaced.

II Library.

The Library in which it is usually difficult to find a vacant place continues to be one of the most popular features of Hart House. The Library Committee have devoted much care to the ordering of new books and also maintain some fifty periodicals in the reading-room as well as other journals in the art gallery and camera rooms. For some years the committee have been building up a collection of private press books and in February a specially designed case in which some of these books could be displayed was placed in the library. The experiment has aroused much interest and should encourage an appreciation of fine printing.

III Music.

This year's music was marked by the hundredth Sunday Evening Concert which took place on 13th January. The first concert was held on 12th November 1922 and since that date concerts have been held, eight in each academic year, in an unbroken series. Mr. J. Campbell-McInnes and Mr. Reginald Stewart who appeared at the first concert in 1922 gave the programme at the hundredth concert. The Great Hall was packed and many members of former Music Committees were present. The Warden spoke of the development of music in Hart House during the last fifteen years and expressed his conviction that the

Sunday Concerts, Friday Recitals and Songsters were now exercising a wide influence on the musical life of the country and Professor M. St. A. Woodside, the present Chairman of the Music Committee, expressed the sincere thanks of all members of Hart House to the musicians of Toronto without whose generous co-operation these experiments could not have been carried out. It is of interest that the Glee Club which made such a promising start in 1933-1934 is now definitely connected with Hart House through the Music Committee. This club, now to be called the Hart House Glee Club, has done excellent work during the past winter under the direction of Mr. Charles Peaker who will again be the conductor next season. The club gave part of the programme at a Friday Recital in December and part of the Sunday Evening Concert on 24th February. Both performances showed great promise and it is not unreasonable to expect that within the next few years the Hart House Glee Club will have become a permanent and important organisation in the life of the University.

IV ART.

The outstanding event this year was the establishment of an arts and crafts room. As mentioned in last year's report the need for such a room has long been realised and during the summer a room adjoining the camera quarters was prepared and the necessary equipment installed. This was made possible by a generous grant from the Massey Foundation. No particular publicity was given to the experiment, but those who were known to be interested were informed and told others. Mr. Carl Schaefer was present twice a week as instructor. Within a few weeks some twenty-five men were actively engaged in the various arts and crafts and the first exhibition was held during April in the print room when linocuts, etchings, wood-carving and sculpture were shown, the standard of the work giving ample proof of the interest and ability of the members. In March the name of the sketch room was changed to the art gallery as being more in keeping with the use made of this room. For a similar reason the name of the Sketch Committee was changed to the Art Committee. Fortnightly exhibitions were held in the art gallery throughout the academic year, the artists being as follows: F. H. Brigden and F. S. Haines; Dorothy Stevens; Carl Schaefer; Eric Gill; Mary, Ruth and Charles G. Eliot; C. W. Jefferys, International water-colour painters and the Sculptors' Society of Canada. The annual exhibitions by undergraduate and senior members of Hart House as well as the annual exhibition arranged by the Camera Committee of Hart House were also held with great success. Monthly exhibitions of reproductions of the works of Old Masters were held in the print room and unquestionably have done much to make undergraduates familiar with the great paintings of the world. The active co-operation of Professor John Alford, the first holder of the Chair of Fine Art, has been greatly appreciated by the Art Committee. Professor Alford conducted a series of informal discussions in the gallery before Christmas "What does the Artist aim at?" and Mr. Martin Baldwin, Mr. Mackenzie Waters and Mr. A. S. Mathers spoke in February on architecture and decoration. Five pictures, all by Canadian artists, have been added to the permanent collection during the past year and the first reproduction of a picture owned by Hart House was published in postcard size in the spring, the canvas chosen for this purpose being Yvonne McKague's "South Shore, Quebec". The final series of Lippmann reproductions of Rembrandt drawings was added to the collection of prints owned by Hart House.

V DEBATES.

The issues of peace and war and also national and international affairs continue to arouse interest and have formed the subjects of interesting debates during the winter. Representatives of Oxford and Cambridge were hon. visitors at a debate in November when the resolution was "That this House is of the opinion that pacifism is an economically and spiritually impossible creed".

The Hon. H. H. Stevens took part in a debate on the resolution "That in the opinion of this House big business is a curse when directed solely by the profit motive", the motion being carried by a vote of three hundred and seven to eighty-eight. Professor Stephen Leacock was an hon. visitor in January when representative democratic government was discussed. The future of liberalism and a vote of confidence in His Majesty's government at Ottawa were the subjects of other resolutions. In the opinion of the Board of Stewards Hart House debates have now become of sufficient importance to justify the Secretary of the Debates Committee occupying a seat on the Board.

VI Student Christian Movement.

The Rev. Leonard Dixon after three and a half years of admirable work as General Secretary of the Student Christian Movement in the University accepted the parish of Orillia last February and his departure is greatly regretted. Under Mr. Dixon's guidance the work of the movement has steadily progressed and by virtue of the relationships he developed between the men and himself he came to be regarded as the unofficial Padre of Hart House. The Advisory Board has appointed the Rev. Wilfred Lockhart as his successor. Mr. Lockhart is a graduate of Victoria and Emmanuel Colleges and for the past two years has been studying in Scotland. He will take over his new position as from 1st July next. The Couchiching Conference in September was attended by approximately two hundred students drawn from Canadian universities from coast to coast. One of the outstanding events this year was the Theological Students' Conference held late in October when one hundred and seventy-eight students from the four theological colleges in Toronto, London, Queen's and McMaster were present. This venture was very successful and will probably be repeated once in every student generation. Prominent speakers during the year were Mr. Gilbert Baker, Father Bulgakoff, Dr. John R. Mott, Dr. Conrad Hoffman and Mr. Raymond Currier. In November a series of addresses on the Social Order was arranged in Hart House. These addresses were given by Professor W. R. Taylor, Professor E. J. Urwick, Sir Robert Falconer and Principal W. T. Brown. Holy Communion was celebrated monthly in Hart House Chapel which was filled on each occasion. During the year there were fifteen study groups in the University which were attended by about two hundred students. Social work was conducted by several of the units among groups of unemployed and also at the Settlement.

VII Theatre.

This year for the first time there was no permanent director, but a number of visiting directors were invited by the Board of Syndics to produce plays. In October "The Devil's Disciple" was performed under the direction of Mrs. Nancy Pyper. In November Mr. Rupert Harvey produced "The Man with the Load of Mischief" and in January "A Murder has been arranged". The Christmas play was "The Pied Piper of Hamelin" directed by Mr. Sterndale Bennett. In March a comedy by P. G. Wodehouse was produced by Mrs. Nancy Pyper. For the season 1935-1936 the Syndics have appointed Mrs. Pyper as Director and an interesting series of six plays, one for each month from October to March, has already been announced. The various college societies gave several interesting plays one of the outstanding performances being "Berkeley Square" which was produced by the Trinity College Dramatic Society. Interesting plays were also given by the French and German Clubs and the Shakespeare Society under the direction of Professor G. Wilson Knight produced "Othello" and "Henry VIII". As in the previous year the Central Ontario Drama Festival was held in Hart House Theatre for five nights in succession at the end of March. Fifteen plays were submitted Mr. Malcolm Morley being the adjudicator. "His Widow's Husband" played by a Hart House group was one of those chosen to be performed at the finals of the Canadian Drama Festival at Ottawa.

VIII Visitors.

Visitors to Hart House during the year have included Dr. H. H. E. Craster (Bodleian Library), Lord Tomlin, Commander Stephen King-Hall, Sir Edward Peacock, Sir Henry Dale, Sir George Schuster, Mr. Allan Monkhouse (of the famous Moscow trial), Mr. Gerald P. Nye (U.S. Senator), Dr. H. J. W. Hetherington (University of Liverpool), Sir Percy Sykes, the Rev. Sergius Bulgakoff, Mr. W. J. Stewart (former Mayor of Toronto), Professor Stephen Leacock, Sir Francis Floud, the Hon. Dr. L. J. Simpson (Minister of Education), Mr. John van Druten (playwright), the Very Rev. Dr. Cyril Alington, Dame Sybil Thorndike, Mr. Julian Huxley, the Hon. R. J. Manion, Mr. Vernon Bartlett, Mr. Alfred Byrne (Lord Mayor of Dublin), Mr. Martyn Green (D'Oyly Carte Opera Company), Mr. Walter Gieseking, Mr. Walter Huston, Sir Willmott Lewis, Mr. J. Frederick Keel and Sir Frank Dyson (former Astronomer Royal).

IX Staff and Committees.

It is hoped that Mr. D. L. Emond who is making a good recovery from his long illness will be able to rejoin the staff of Hart House in September. Mr. J. R. Johnston who took Mr. Emond's place temporarily during the past two winters is now working for Canadian students in England. The experiment of placing the management of the billiard room under the control of the House Committee has proved successful. This spring Professor E. K. Brown has resigned the chairmanship of the Library Committee and Professor E. A. Havelock that of the Art Committee. Hart House is deeply grateful to them and also owes sincere thanks to all senior members for the invaluable services they render year by year to Hart House. The practice of inscribing the names of the members of the Board of Stewards on panels in the Great Hall has been discontinued and steps are being taken to record on parchment the names of all those who have served on the various committees of the House since its inception. Each committee has made and is making a distinctive contribution to the life of Hart House and it was considered fitting that the names should be thus recorded.

(20) REPORT OF THE DIRECTOR OF THE CONNAUGHT LABORATORIES

(*J. G. FitzGerald, M.D., LL.D.*)

This, the twenty-first annual report of the Director of the Connaught Laboratories, is a review of the activities for 1934-1935.

This year the laboratories have suffered a most grievous loss. The death of Colonel Sir Albert E. Gooderham on April 25th came as a profound shock to all and occasioned deep sorrow to the personnel of these laboratories. A very intimate and personal relationship existed between members of the staff and Sir Albert or 'The Colonel' as he was invariably called by those associated with him. He was the first generous benefactor of the laboratories, and entirely upon his own initiative gave unsparingly of himself and of his substance. The University Farm, the Main Building and the Cottage of the Assistant Director constituted his original gift. This was made at a time when its significance can hardly be overestimated as a factor insuring the continuance of the work begun on a very modest scale in the Antitoxin Laboratory, Department of Hygiene. Not only this munificent benefaction but twenty years of devoted personal service as first and only Chairman, to the present time, of the Connaught Laboratories Committee of the Governors was further and continuing evidence of his devotion to the high purposes for which Connaught Laboratories were established. No more loyal, helpful, kindly patron could ever have been associated with a young and growing scientific institute than Sir Albert Gooderham in his relationship to Connaught Laboratories and its staff. With extreme regret but with

abiding affection and esteem we pay our last respects to a splendid man and a great Canadian.

This year Connaught Laboratories have come of age. The principles upon which they were founded and the purposes for which they exist remain unaltered. First and foremost they endeavour to serve mankind in providing facilities and support for the conduct of research in preventive medicine and those branches of biological and related sciences which constitute its foundation stones. Then too, Connaught Laboratories make available for health departments, hospitals, physicians and others, biological products of inestimable value in the prevention and treatment of disease. The fields of usefulness being cultivated are continually increasing in extent as new knowledge is gained in bacteriology, immunology, physiology and biochemistry. The intimate relationship existing between the School of Hygiene and Connaught Laboratories is elsewhere referred to. Immense advantages accrue from this, of benefit to the university constituency and to the community at large.

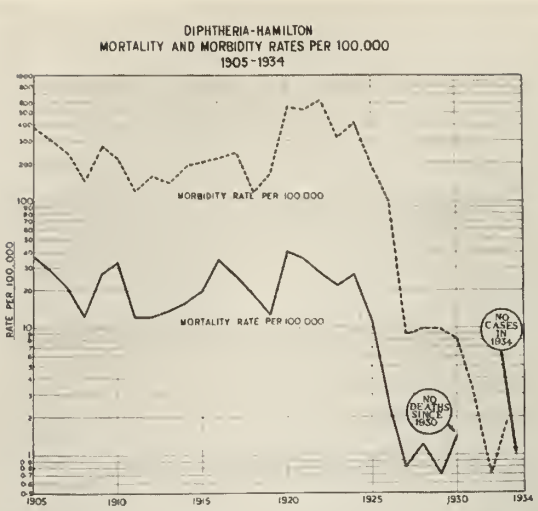
A development of unusual interest to the laboratories is the result of a recently completed arrangement whereby a western division of Connaught Laboratories is soon to be established in the University of British Columbia. At the outset it is intended to provide in this new division facilities for research in preventive medicine. A small staff of Connaught Laboratories personnel will be seconded for duty in the division. By arrangement with the Government of the Province of British Columbia, through the Department of Education and of the Provincial Secretary (of which departments the Honourable Dr. George M. Weir is in charge), and with the Governors of the University of British Columbia, a Research Member of Connaught Laboratories will be in charge of the undertaking. He will also serve as Director of Laboratories of the Provincial Board of Health, British Columbia, and as Associate Professor and Head of the Department of Bacteriology and Preventive Medicine, University of British Columbia. This arrangement is to continue for a period of one year in the first instance. Dr. C. E. Dolman, Research Associate, Connaught Laboratories, has been appointed to the positions thus established and will assume his new duties October first. Dr. Dolman of course continues as a part-time member of the staff of Connaught Laboratories.

Last year a general statement was made in reference to the interest of the laboratories in the warfare against diphtheria and to the encouraging advances being made to curtail its ravages. Hereunder in graphic and tabular form is illustrated, more concretely, the progress being made:—

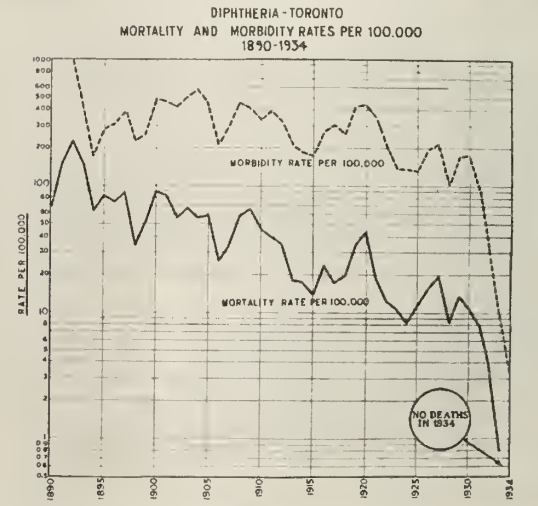
TABLE I.—DIPHTHERIA IMMUNISATION IN FOUR CITIES

City	Period	Number Immunised	Population 1934	Diphtheria Death Rate 1934
Hamilton	1922 to 1934	47,680	155,000	0
Toronto	1926 to 1934	85,966	629,300	0
Montreal	1928 to 1934	86,996	860,000	3.5
Buffalo	1927 to 1934	157,939	601,700	1.0

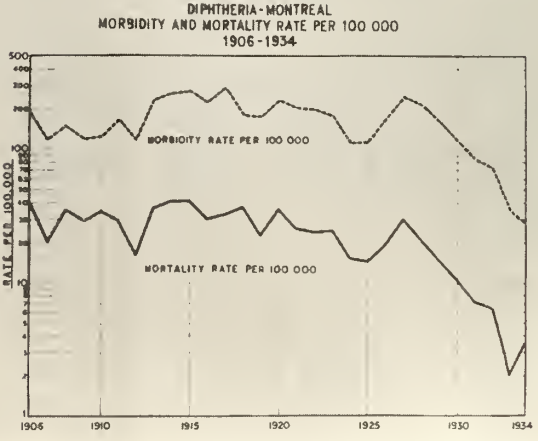
GRAPH I



GRAPH II



GRAPH III



Diphtheria Toxoid or Anatoxine is the specific prophylactic which thus far has proven most valuable as the immunising agent. This is true if one is concerned with innocuity and with the degree and durability of the protection conferred. Extended investigations in the laboratory and in the field have been carried out to ascertain these facts and in this undertaking several members of the staff have collaborated.

My colleague Dr. R. D. Defries has submitted a report of the investigations carried on in the filterable virus section and in the department of epidemiology and biometrics under his direction. Dr. James Craigie and Dr. F. O. Wishart have continued their study of the antigenic constitution of the elementary bodies of vaccinia virus. They have shown that the bodies possess, when infective, two agglutinogens. One of these is exceedingly labile and readily destroyed by physical and chemical agents to which the other is resistant. Serological identity of "free" *L* and *S* precipitinogens with the *L* and *S* agglutinogens has been established. A method for the purification of *LS* antigen without loss of the contained labile fraction has been evolved. A new technique of investigating the "immunity" produced by non-infective elementary bodies has been introduced. These developments make it feasible to initiate a profitable investigation of the mechanism of immunity to vaccine virus and a thorough study of the so-called neutralisation reaction.

Dr. Wishart has carried out a study of the sensitising effect of various antigenic constituents of elementary bodies; employing therefor the Dale smooth muscle preparation. Dr. Craigie and Dr. K. F. Brandon have studied a large number of strains of E. typhii received from Dr. McCrady of Montreal and from Dr. McNabb of Toronto. It was found that a new technique of culture isolation and serological investigation was essential for the recognition of the different antigenic types of this species of micro-organism comprised in the group of cultures investigated. This was designed to facilitate recognition of the predominating "V" type antigen encountered. Two new types of E. typhii not hitherto described have been recognised.

Dr. Brandon has begun a study of the epidemiology of almonella infections. Dr. Craigie and Dr. M. H. Brown have collaborated on the preparation of an improved typhoid vaccine and its assay by the mouse method. Dr. G. R. Walton has carried on work on the *in vitro* cultivation of vaccinia virus by the Goodpasture, Stevenson and Butler, and Rivers methods. Connaught Laboratories strain of calf lymph has been carried through forty generations by serial passage on egg. Specific serological reactions have been obtained with extracts of the culture virus and its homologous immune rabbit serum. Dr. Defries has studied the pathogenicity of the Pasteur strain of rabies virus for white mice and for rabbits. Passage of the Pasteur strain intramuscularly through mice has enhanced its pathogenicity. Dr. Brandon has succeeded in three instances in transmitting measles virus, from human cases of the disease, to monkeys. He has also been responsible for the preparation of a quantity of human convalescent measles serum. Some of this has been dried by the Craigie method and stored *in vacuo* for future use. Finally, Dr. Brandon has made an epidemiological study of an outbreak of typhoid fever which occurred in York Township.

Dr. Mary Ross has carried further the study begun with Dr. Neil McKinnon, of the efficacy of diphtheria toxoid as an immunising agent and of the durability of the protection conferred thereby. The results of the investigation were presented by Dr. McKinnon at the joint meeting of the Canadian and American Medical Associations, in Atlantic City in June, also at the meeting of the State and Provincial Health Officers of North America. Dr. Ross has also collected and analysed the causes of mortality in Canada since the year 1921. Dr. Ross in collaboration with Dr. A. H. Sellers is investigating the deaths from all causes, by age groups and for certain diseases (particularly those affecting elderly persons) in Ontario for the period 1909-1932. Dr. Sellers has also completed a study of maternal deaths in Canada; an investigation of the upward trend in

mortality from diabetes mellitus; a survey of deaths due to accidental causes with special reference to those resulting from road accidents, for the period 1921-1931, in Canada; and lastly a study of stillbirths in Ontario.

In the section of bacteriology and immunology researches have been carried on under the direction of Professor Donald Fraser. Certain of these have been contributed by members of the department of hygiene and preventive medicine. Doctor Fraser himself has been engaged in attempts to standardise the virulence test for C. diphtheriae. He has also collaborated with Dr. A. L. McNabb in an investigation of certain methods of performing the test. The advantages which would follow success in these efforts would be very substantial indeed and of great advantage in routine public health bacteriology. Dr. Fraser has also studied a group of strains of so-called avirulent C. diphtheriae. The survey of diphtheria antitoxin content of certain groups of persons, the antitoxic response of a group of eighty children at various intervals after immunisation, and the assay of natural antitoxin content of the sera of groups of persons living in the tropics, the arctic and in other regions, has been completed by Dr. Fraser and his assistants. Studies of the response of human beings to certain diphtheria toxoid preparations have been initiated in collaboration with Dr. A. L. McKay. In co-operation with Professor J. A. Doull of Western Reserve University, the correlation between results of Schick tests and of assays of antitoxic titre in a group of students is being made. A comparison has been made of a series of commercial Schick test toxins upon some sixty students using Connaught Laboratories product as control. Wide discrepancies in the value of these were discovered, a matter of practical interest and importance.

Dr. Dolman and his collaborators have continued their exceedingly interesting and important studies in the field of staphylococcus infection and immunity. A communication which has just been published by Dr. Dolman and Dr. J. S. Kitching records the results of a study of flocculation reactions between staphylococcus toxins and toxoids and staphylococcus antitoxic sera; the binding power of antitoxin for staphylococcus toxoid; antigenic tests for staphylococcus toxoids; attempts to differentiate two apparently distinct types of staphylolysin obtained from two strains of staphylococcus; the significance of staphylococcus sheep's cell haemolysin; in collaboration with Miss L. Farrell, attempts to purify and concentrate crude staphylococcus toxin. Miss Farrell has also examined the effect of potash alum on crude staphylococcus toxoid.

In addition to the above researches Dr. Dolman and his associates have carried on the preparation of staphylococcus toxin and toxoid for animal immunisation and for human treatment. They have also assayed all staphylococcus antitoxin prepared for the treatment of staphylococcus infections. Dr. Dolman was invited and was able to attend the June meeting, held in London, of the Medical Research Council's Therapeutic Trials Committee on Staphylococcus Toxoid and Antitoxin.

Dr. Frieda Fraser and Dr. Helen Plummer have continued their very interesting and important studies on streptococcus infections and immunity. They have, among other things, ascertained the antitoxin content of human sera in normal individuals in relation to the Dick test and in patients with haemolytic streptococcus infections during treatment with antitoxin; of undergraduate nurses at the beginning of training, before and after being employed on scarlet fever wards, and at the end of their period of training; in Dick-positive persons, before, during and after immunisation; the protective action of antitoxin against the injection of living cultures in rabbits. The above were reported upon in Section V, Royal Society of Canada in May. Dr. Fraser and Dr. Plummer have also been occupied in a number of researches on streptococcus toxin; the cultural and serological characteristics of haemolytic streptococci.

Dr. M. H. Brown has made further progress in studies on the pneumococcus. Types I and II of this species have been transformed, type I to II and vice versa. Potency tests employing acetyl polysaccharide as antigen with native immune

horse serum and concentrated antibody solution have been carried out. An appraisal of the relative merits of fifty per cent basis of mortality in the assay of immune serum instead of that currently employed has indicated that the former possesses certain advantages. The typing of cultures of pneumococci obtained from the Hospital for Sick Children and from the Toronto Western Hospital has been continued. Various studies of typhoid and paratyphoid species of bacteria have also been pursued. Dr. Brown has collaborated, too, with the Department of Health, Ontario, in the assay of various preparations of tuberculin which he has made in these laboratories. The typing of a very large series of strains of B. tuberculosis, now numbering 233, has been continued. With Dr. A. H. W. Caulfeild and Dr. Waters, Dr. Brown has investigated the antigenic properties of various fractions of ragweed pollen utilising for the purpose the Prausnitz-Küstner technique. The results obtained have been presented to the June meetings of the American Allergic Society and Association for the Study of Asthma. Dr. P. A. T. Sneath has continued his interesting study of tetanus toxoid immunity in man and has just published his observations. He has also undertaken certain investigations of cultures of E. histolytica and E. coli. A faecal survey of intestinal protozoa in man is also being made by Dr. Sneath. He has also established colonies of C. lectularius, A. aegypti and certain local species of culex.

Dr. N. Silverthorne has made very interesting observations on the bactericidal action of human and guinea pig blood on the meningococcus. These are being reported in the near future. A study of meningococcus infections from the bacteriological, clinical and epidemiological viewpoints, which has been in progress for nearly four years, is being continued, as is the survey of "normal" meningococcus carrier-rates. Dr. Silverthorne is also actively pursuing whooping cough studies, laboratory and clinical, which he initiated some time ago. Dr. R. J. Gibbons has resumed his investigations of Sonne dysentery. A horse has been immunised and a high potency serum is now available for clinical trial of human infections with this micro-orgnism should an opportunity present.

Professor C. H. Best in charge of the section in physiology and biochemistry and his colleagues have had an exceedingly active and busy year. The work of this section is intimately related to much of that conducted in the department of physiological hygiene which is also under Dr. Best's direction. Some of the studies to be mentioned have been carried on in that department under research grants from Connaught Laboratories. Among these reference may be made to the following:—Dr. Ruth Partridge has continued her investigation of respiratory processes by means of the valve amplifier technique. Dr. Patridge and Dr. MacLean have completed their studies of ventilation and illumination of school rooms and have published several communications upon the above subjects. Dr. MacLean has collaborated with Dr. Best in the histological studies of the effect of choline in the prevention of liver degeneration.

Dr. E. W. McHenry, with Mr. M. L. Graham and Miss E. G. Gavin, has made further observations upon the nutrition of certain groups of individuals and has published reports upon the colorimetric estimation of vitamin C and upon choline in relation to growth in rats. Dr. Hugh M. Barrett has developed a method for measuring trichlorethylene in air and has utilised it in a series of measurements of the concentration of this substance in the air in two industrial establishments. This is highly important from the standpoint of health hazards in industry. Dr. Barrett has also observed the effects of benzene and its oxidation products which bring about certain characteristic destructive changes in blood cells. The determination of the degree of atmospheric pollution at certain points in Toronto and vicinity is being continued. Mr. K. Kay in conjunction with Dr. Barrett has constructed a spectro-radiometer which it is expected will be of service in a continuation of the study of the reduction of ultra-violet radiation by smoke-polluted atmosphere.

In this section of the laboratories, also under Dr. Best's direction, Dr. D. A.

Scott has continued his important work on crystalline insulin. With Dr. Albert Fisher he has obtained additional evidence which indicates that the crystals prepared by the various methods employed are the zinc salt of the insulin protein. It has been ascertained, too, that there is an adequate amount of zinc in the pancreas from which the insulin was extracted to account for all that has been found in the crystalline insulin compound.

Dr. Scott and Dr. Arthur Charles have made further progress in their work on heparin. This has been of real importance in relation to the investigations of Dr. D. W. G. Murray in the department of surgery and of Mr. L. Jacques and Professor Best in the department of physiology. Dr. McHenry and Mr. Graham have made quantities of glycine and made it available for clinical studies. With Dr. R. A. Cleghorn of the department of medicine, Dr. McHenry has prepared potent extracts of the cortex of suprarenal. This material has proven its value in experimental animals and is being utilised in the treatment of cases of Addison's disease. Dr. Best with the assistance of Miss Ridout has continued the investigation of the effect of choline on fat and sterol metabolism. With Mr. J. Campbell, Dr. Best has prepared and purified ketogenic substances obtained from the anterior pituitary gland. Dr. G. F. Marrian has been furnished with material for his oestrin researches. The Farm Section has assisted in this undertaking also. A very large number of publications have appeared during the year in which the above work has been presented.

Under the direction of Dr. P. J. Moloney in the section of Chemistry, Dr. Edith Taylor has made further progress in the work referred to previously, in which she was able to prepare an exceedingly satisfactory medium for the production of diphtheria toxin using for the purpose hog's stomach autolysates and maltose only. In large scale production of toxin at the Farm Section, Dr. Donald Cameron has been successful in applying Dr. Taylor's method, and a considerable number of batches have been prepared with very high flocculating values. Dr. Taylor is now engaged in detailed studies of the various elements concerned, from the standpoint of the constituents of the medium and of the physical factors involved. These researches are of great theoretical interest and practical importance. Mr. M. D. Orr has concentrated on two main lines of investigation during the year, namely, a study of the effect of certain adjuvants on the antigenicity of diphtheria toxoid. In this work it has been proven that clear solutions of diphtheria toxoid can be prepared which are better antigens than unmodified toxin. Further the valuable information has been obtained that alum precipitated toxoid, dissolved in sodium potassium tartrate and administered in two doses (to susceptible persons), will render ninety-four per cent of them immune if an interval of four weeks elapses between doses, and ninety-seven per cent if an interval of six weeks is allowed; the other subject investigated was the effect of chemical alterations upon diphtheria toxoid. Dr. Doreen Smith has, under Dr. Moloney's guidance, explored still further the detoxifying action of ox-bile. These investigations are of fundamental importance and are an essential preliminary to any experimental efforts to illuminate the mechanism of bacterial intoxication in man and lower animal species.

At the University Farm (in the Farm Section of Connaught Laboratories) an exceedingly busy year of routine work and of physical expansion both in land and buildings (which will be referred to elsewhere) has been experienced. It has been fruitful also from the point of view of research. Dr. Neil McKinnon, resident assistant director at the Farm, has served not only in that capacity but has also continued his teaching in epidemiology in the School of Hygiene.

Under Dr. McKinnon's direction, Dr. Donald Cameron has made excellent progress in the study of the factors influencing diphtheria toxin production and of the time required for its detoxification. He is also investigating the effects of single and multiple doses of diphtheria toxoids of different Lf values, on antitoxic response in the guinea pig. The successful use by Dr. Cameron of Dr. Taylor's medium has been mentioned. Dr. Cameron has also utilised for the

purpose of scarlet fever toxin production, certain media with varying hydrogen ion concentration, with most satisfactory results in a number of instances. Dr. C. Siebenmann, after a long leave of absence due to illness, has resumed his work upon the refractometric measurements of proteins and upon the relationship between toxin and protein content of culture filtrates. It is suggested that this may provide a more ready means of following the amount of growth in culture media than is presently available. These findings have been presented to the Royal Society of Canada. A simple method of detecting the formation of hydrogen sulphide in cultures of C. diphtheriae, containing metallic silver in the medium, has been devised. Dr. Siebenmann's results, utilising his method, have been most interesting. The general field being explored, that is, the study of antigens and antibodies, by physical methods, is most promising. Dr. Kerslake has studied a virus infection in a group of horses. He has also been engaged in a parasitic survey of the horses at the Farm. Dr. R. C. French has made a most thorough and comprehensive analysis of the distribution of the antitoxins of diphtheria, tetanus, staphylococcus and streptococcus in their respective plasmas. The resultant information has been used to great advantage in routine concentration. A study of the blood chemistry of horses undergoing immunisation is also engaging Dr. French's attention. Mr. K. C. Gunn has made some exceedingly interesting observations upon diets and the effects of certain dietary deficiencies upon guinea pigs. He obtained no evidence that the death of guinea pigs fed deficient diets is in any way attributable to infection; on the contrary it seems that a deficiency in vitamin C is solely responsible. Mr. Gunn has also observed a difference in the intestinal bacterial flora of guinea pigs fed hay and oats and those of guinea pigs to whose diet cabbage was added. For many years these laboratories and others having large guinea pig colonies have suffered severe losses in guinea pigs, usually in the spring, when the diet of the animals was modified owing to the exhaustion of supplies of roots, cabbages, etc. It is hoped that Mr. Gunn's carefully controlled experiments may shed some light on a problem urgently in need of solution. This concludes a brief commentary on some of the research activities of the staff during the year and reflects an ever increasing interest in the multitude of opportunities for the exercise of intellectual curiosity. With the completion of the programme of expansion of the Hygiene Building at the end of 1933, further delay was impossible in alleviating the condition at the University Farm. The volume of new work there had resulted in the available space and facilities being completely overtaxed. Research and routine undertakings were greatly hampered in consequence. The small animal colonies had overgrown their quarters with the result that epidemic outbreaks were numerous and serious—an inevitable sequel of overcrowding. To meet this situation one of the new horse stables was taken over and altered to serve as a guinea pig house and a new rabbit hatchery was built. In November it was decided to convert into laboratories the remainder of the stables completed in 1929 and to provide therein facilities for all routine laboratory work, and also to erect new stables. This is now being completed.

A new heating unit has been built and equipped. A volatile solvents building is to be built also, and the main laboratory building rearranged to provide for the needs of research and administration exclusively. These changes will involve the expenditure of a very considerable sum and thus far an appropriation of seventy-five thousand dollars has been made available. Additional land was found to be necessary upon which new stable units could be built. Five acres, immediately to the east of the farm, have been purchased from Mr. Oswald James for this purpose. The helpful advice and assistance of the Superintendent and of the members of his staff in carrying through the programme of expansion at the Farm is gratefully acknowledged. Dr. McKinnon, Mr. Andrew Hazeland (who has returned from Hong Kong to the Farm Section for a period of six months) and the staff of the Comptroller's office have collaborated most effectively in this very considerable undertaking, a burden which was assumed in

addition to routine duties and responsibilities which have been particularly heavy during the period under review. To all concerned the Director desires to express his thanks and appreciation.

It is impossible in the space remaining to submit in detail a suitable report upon the routine work either of the University or Farm sections or of the Comptroller's office or library. Greater quantities than ever before of practically all products have been prepared. These include:—diphtheria antitoxin, tetanus antitoxin, scarlet fever antitoxin, staphylococcus antitoxin, anti-meningococcus serum, concentrated anti-pneumococcus sera, diphtheria toxoid, staphylococcus toxoid, Schick-test materials, scarlet fever toxins, typhoid vaccines, pertussis vaccine, vaccine virus, rabies vaccine. Old Tuberculin, heparin, liver extracts and Insulin. A new product added during the year was staphylococcus antitoxin. The actual volume of distribution of these products as a whole, was greater than in any previous year, the percentage increase of 1934-1935 over the previous year being about ten per cent. The areas in which Connaught Laboratories products are distributed include all Canadian Provinces, Bermuda, British Honduras, British West Indies (St. Christopher, Nevis, Jamaica, Trinidad, etc.), Chile, England, Formosa, India, Irish Free State, Japan, Newfoundland, Roumania, South Africa and the United States of America.

Connaught Laboratories fellowships in public health were granted to Dr. E. D. R. Bissett of Manitoba, Dr. H. B. Bustin of New Brunswick, Dr. J. S. Cull of British Columbia, Dr. A. C. McGugan of Alberta (first term), and to Dr. A. E. Allin of Ontario (second term). The laboratories were made accessible for teaching purposes to graduate and undergraduate students in medicine; to students in the School of Nursing; and to other special groups, societies and individuals. A great number of persons from many parts of Canada, the United States and Great Britain, were most welcome guests, as were visitors from Australia, Brazil, British Solomon Islands Protectorate, China, Formosa, France, Hong Kong, India, Jamaica, Newfoundland, Panama, South Africa, Spain and the Straits Settlement.

The personnel of Connaught Laboratories on June 30th, 1935, numbered 219 and there were in addition twenty workers temporarily employed at the University Farm. This is of course the largest staff at any given time since the laboratories were established. Among the 219, 48 were University graduates of whom 23 were in the full-time service of the laboratories.

The exceedingly onerous and varied duties of the staff of the comptroller's office, both in collaboration with research and teaching personnel, and in the conduct of routine duties, have been discharged in a most satisfactory fashion. To Mr. F. Lorne Hutchison, comptroller, and his colleagues Mr. Boyd and Mr. Allen, as well as to Miss Finegan at the Farm, Miss Blair, Miss Kinnear, Miss Graham, Miss Bolton, Miss Linton, Mrs. Malcolmson, Messrs. Knowles, Parkinson, Izatt, Johnston, Delaforce and their assistants in the University section, the thanks of the Director are tendered.

The library facilities of Connaught Laboratories have been increased substantially during the year. The volume of work is now such that the whole-time service of Miss O. E. Somerville (who has heretofore also acted as secretary of the School of Hygiene) is now required in the library, as well as that of Miss K. Pichler. She is responsible for translations, indexing, and the cataloguing and filing of reprints of articles by members of the staff. Total recorded attendance in the library during the year numbered 5999 and the loans of books (2269) and journals (1509) totalled 3778. The sixth volume of Connaught Laboratories Studies was issued during the year. The number of articles published each year by members of the staff is now so large that such a volume may be necessary annually. The library committee met on three occasions during the year. To the members of that committee and to Miss Somerville and Miss Pichler the Director desires to express his thanks for their most helpful assistance.

The vacancy on Connaught Laboratories Committee of the Governors was

filled during the year by the appointment of Mr. Balmer Neilly. The loss sustained by the death of the Chairman of the Committee, Colonel Sir Albert E. Gooderham, has been chronicled with deep sorrow. Mr. T. A. Russell, Vice-Chairman of the Committee, is most generously serving as Chairman, for the present. This is highly appreciated since the demands of the University upon Mr. Russell's time are already so substantial.

To the members of the Committee and to his colleagues, associates and assistants the Director begs to convey thanks for loyal support and co-operation at all times.

(21) STATEMENT REGARDING THE MUSEUM OF ARCHAEOLOGY

(Professor C. T. Currelly)

The work of the Museum during the year 1934-35 has been essentially a continuation of settling into the new building, work that will probably take another five years. When objects run into hundreds of thousands, a small staff must work for a long time to arrange, mount and label them properly.

During this year, the Oriental carpets have been mounted and placed in the galleries. Low platforms have been constructed for the furniture, to save the legs and bases from injury. The great Han dynasty stone frieze has been successfully mounted and is now on the wall, where it may be properly examined for the first time since we obtained it some years ago. The framing and placing in position of a large number of Chinese paintings has made a start on the exhibition of our very extensive collection of paintings. Just at the end of the year six cases were started which have underneath them a total of 216 drawers; these will be glazed so that their contents may be examined by the public. This is a method of exhibition that we have found most satisfactory, as it is economical of both space and money. A large quantity of material has been worked over and placed in the cases, and suitable labels made for it.

A large programme of lectures by the scientific staff of the Museum was laid out for the autumn, winter and spring. It seemed altogether too ambitious, but to our pleasure, the attendance was surprisingly large, on certain afternoons both lecture rooms being filled at the same hour. Bishop White started a series of Sunday afternoon lectures that were extremely well attended. Attention was given to talks to organisations and groups that came to the Museum. The number of such groups has been much increased this year. Miss Home's classes have been thoroughly successful and the Ceramic Art Club presented a substantial sum of money to the Museum to purchase further pieces for study and for the aid of the pottery industry. 25,497 schoolchildren were taught by Miss Payne of the Public School staff.

There were three special exhibitions during the year. A loan exhibition of books connected with museum work, printed by the British Government, was of such surprising size that it showed very clearly how intensely eager the people of Great Britain are for this type of education. Another special exhibition, to be kept on view till the autumn, is the Harry Wearne Collection of Textiles, representative of the magnificent collection of printed cottons presented to the Museum by Mrs. Harry Wearne. The Society of Canadian Painter-Etchers held their annual exhibition in the Museum as usual, and the year's work in different kinds of printed pictures showed how well Canada is progressing in a type of art that is daily becoming more important.

In its accessions the Museum has been most fortunate during 1934-35. In the prehistoric field, a dream of thirty years has come true and a Bronze Age shield has been received, the only one in America as far as we know. It was found in the Lea valley near London many years ago. A British Bronze Age food vessel was also acquired, an interesting collection of flint implements from

Poland, and a very fine group of 63 bronzes from Luristan. The series of axes in this group includes a duplicate of one recently found which is dated to 2282 B.C. by a cuneiform inscription. These axes are properly hafted and their great beauty also makes them important works of art. Details of bracelets, swords and other objects show them to run somewhat parallel with Leonard Woolley's second period at Ur, which is about the date of the dated axe. Some Luristan pots and a piece of painted pottery of the third millenium B.C. were also acquired. The second group of Mr. C. W. Jefferys' paintings of life in prehistoric Europe was finished at Christmas time and mounted and labelled. These paintings add very much to the attractiveness of the prehistoric gallery and are most valuable to the visitor as an aid in visualising the use of the prehistoric implements.

In our classical department, a fine Roman marble head has been added.

Several outstanding additions have been made to the collection of arms and armour. One of these was a Viking sword elaborately inlaid with gold, which was probably lost in the famous attack on Paris in the time of Alfred the Great. This is an earlier type than the beautiful sword presented by Dr. Sigmund Samuel some years ago, and is a most valuable possession for the Province. A Henry VIII buckler was received, rare and in excellent condition. Included in the 21 lots purchased at the sale of the Daly Collection of firearms were the famous Kentucky rifle which gave the American frontiersman such an advantage in the wars with the Indians, the exquisitely made and ghastly double-barrelled Irish blunderbuss, and certain other pieces that not only show fine workmanship but will also be of great advantage to writers and to those who have to make illustrations of early Canadian and American affairs.

In the woodwork department, we acquired two nearly life-size angels by one of the early French-Canadian woodcarvers, and also a head by Guy, which was presented by Dr. H. M. Tovell.

In the line of ceramics, we were extremely fortunate in being able to obtain a fine selection from the sale of Lord Revelstoke's collection. All the pieces are early and show the enthusiasm which made England the centre of the colossal pottery industry. Canada's terrible waste of pottery, the breakages running into some millions of dollars a year, is a constant challenge to us to develop this industry, and the Museum is doing its level best to provide every help possible for us to become self-sustaining. A beautiful Bow cup and saucer and gravy-boat were given by Mr. O. Glendenning, and the Canadian National Exhibition placed on deposit two very fine pieces of ceramic sculpture.

In the textile department, the outstanding gifts were the Harry Wearne Collection comprising over a thousand specimens of painted and printed cottons, and a large piece of red and gold silk, a 17th century Italian weaving, presented by Miss Helen F. Grand. Five late 19th century dresses were also acquired and four pairs of shoes.

In the section of printing and the book, the Post Office Department continued to add the new issues of Canadian postage stamps. The gift of a set of linoleum blocks was welcomed for giving instruction in this type of printing. We were also given the Henry Chesmer Boomer Collection of family miniatures, which will be useful to many departments.

In the East Asiatic department, the fine Ch'ien Lung porcelain vase presented by Miss Ethel K. Dickey was the only accession. Most of the attention in this deparment has been given to getting into usable form our colossal collections. In the Japanese section, Miss Dickey also gave us two large old Imari vases, and we obtained a beautiful collection of 80 pottery tea jars of the 17th and 18th centuries and four small pieces of fine woodcarving.

The ethnological collection has had tremendous growth. Among the new pieces were two Peruvian feather cloaks of great beauty and amazing workmanship, and two Peruvian gold masks. 181 pieces of Mayan pottery came from Spanish Honduras; much of this is clay sculpture of great interest. One of the

shrunken Ecuador heads was presented by Dr. James C. Paterson. 117 objects illustrating the negro culture of Liberia were brought to the Museum by the Rev. Gordon Mellish. A large number of Eskimo specimens was obtained, largely the gift of Mr. A. J. H. Eckardt and Mr. J. C. Rogers. A collection of 40 pipes of the Salish tribes fills a gap. From the West Coast we also obtained three Haida masks, a Tsimsyan carved wood chest and a slate figurine. A large number of arrow-heads was obtained from Saskatchewan, a rabbit-skin parka, and from Ontario several hundreds of objects, including the J. P. Spence Collection, mostly from Kent and Elgin counties. The several hundred objects presented during the year by 61 donors, whose names cannot all be mentioned in a brief report, fortunately included a large quantity of Ontario Indian material. We are hoping very soon to be able to make a start on dividing the Ontario material by counties, so that it will be more readily at the disposal of the increasing number of people who are interested in the early history of our own province.

(22) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF ZOOLOGY AND THE BIOLOGICAL MUSEUM

(Professor J. R. Dymond)

The gallery exhibits have been added to during the year by the addition of mounted specimens of bison, elk, cheetah, panda, black bear and glacier bear. The mounting of these specimens was made possible by the Reuben Wells Leonard bequest. A habitat group depicting the extinct passenger pigeon was opened on January 3rd by Hon. Dr. Simpson, Minister of Education. This group has received a great deal of publicity and has proved to be one of the feature exhibits of the Museum. Smaller habitat groups illustrating the fauna and flora of flowing and standing water were also completed during the year.

A number of specimens have been added to the systematic collections and to the economic, life history and synoptic insect exhibits. The research collections have been enriched by the following numbers of specimens in some of the principal groups,—Mammals, 553; birds, 1220; reptiles and amphibians, 397; fish, 471; insects, 9335; crustacea, 635; molluscs, 3723; miscellaneous, 1307. Most of this material was received as donations or was collected by the staff. A small amount was purchased.

Among the more important of the donations were:

Mr. Paul Hahn, 5 passenger pigeons, 3 other birds, 17 photographs of captive passenger pigeons and a sketch of a pigeon flight made in 1875. Mr. Hahn was also instrumental in having 7 other specimens of the passenger pigeon donated to the Museum.

W. A. Brodie—2 passenger pigeons.

H. P. Bingham—2 passenger pigeons.

The Port Perry Public Library—2 passenger pigeons.

C. and G. J. Fothergill—1 passenger pigeon.

Misses Wheatley—1 passenger pigeon.

Wm. Petrie—1 passenger pigeon.

Mrs. B. A. Bensley and Dr. Edward Bensley—Framed, enlarged photograph of Professor Bensley.

Entomological Society of Ontario—2000 European coleoptera.

Dr. H. M. Bowen—Moose head.

J. B. Robinson—31 pheasants (12 species).

Toronto Parks Department—18 mammals and 33 birds, including Grevy's zebra, Tasmanian devil, black buck, cougar, Guinea baboon, Cuban flamingo, 2 king parrots, crowned and sarus cranes.

R. V. Whelan—1270 northern lepidoptera, 25 mammals, 7 birds and much other miscellaneous material.

National Parks of Canada—1 mule deer.

Donations were also received from the following: Ralph Akey; Dr. A. E. Allin; Robert Amos; Lloyd Anderson; Mrs. E. Atkins; Mrs. H. A. Aylwin; J. L. Baillie, Jr.; W. Baldwin; Frank Banfield; G. A. Banks; Roger Barr; A. E. Bastedo; M. U. Bates; L. H. Beamer; F. Beattie; A. W. Bell; W. H. Bennett; Mac. Berry; R. D. Black; A. A. Blair; S. O. Boms; Mrs. C. E. Bonnell; O. E. Booth; Dr. J. A. Bradley; C. G. Brennand; J. F. Brimley; A. W. A. Brown; Norman Butler; Dr. R. A. Pyer; Dr. Roy F. Cain; Dr. J. A. Campbell; A. H. Carter; Dennis Chitty; Gordon Clark; C. H. D. Clarke; Dr. F. A. Clarkson; F. C. Clarkson; Dr. W. A. Clemens; E. D. Clipsham; W. W. Cole; C. E. Corfe; Corporal E. S. Covell; Prof. A. F. Coventry; Miles Coverdale; Donald Cowan; Dr. Jos. Cramer; Stuart Criddle; E. T. Crocker; Ralph C. Cummer; Murray W. Curtis; E. M. S. Dale; E. S. Davison; E. J. Deacon; Colonel L. S. Dear; Osborne Degeer; Wm. F. Depew; O. E. Devitt; Robert Devitt; Alfred Dickson; Frank S. Dingman; R. W. Dodman; S. C. Downing; G. E. Duncan; J. W. Duncan; F. Edwards; R. B. Elgie; W. B. Elley; Evans and Co. Ltd.; A. M. Fallis; Frank Farley; Prof. J. B. Ferguson; J. H. Fleming; Dr. Norma Ford; Mr. Fox; R. H. Fraser; W. Freeborn; F. E. J. Fry; Harold Fulcher; L. B. Gartshore; Robt. J. Gill; Dr. Seymour Hadwen; N. T. Haggert; Walter Hahn; E. R. S. Hall; H. M. Halliday; Mrs. H. M. Halliday; Dr. J. L. Hart; Mrs. J. A. Harvey; A. E. Hatch; H. Hazen; Martin Hissla; C. E. Holmes; James Hughes; Dr. A. G. Huntsman; Dr. W. E. Hurlburt; Leslie Irgoe; Dr. Lawrence Irving; H. R. Ivor; Howard B. Jackson; John D. Jacob; R. Jocelyn; T. W. Jull; Dr. Howard Kelly; Orval Kelly; Mrs. J. E. H. Kelso; C. J. Kerswill; H. G. Kimber; Vern Kribbs; Prof. P. V. Krotkov; Mrs. Ella Kuitunen; T. B. Kurata; Miss Mary LaFranchise; Earl Lemon; Mrs. R. W. Leonard; R. G. Lewis; R. V. Lindsay; Mrs. Alan Lishman; Hoyes Lloyd; Dr. G. H. W. Lucas; H. W. Lunn; F. A. MacDougall; A. MacLean-Howard; D. A. MacLulich; D. E. MacMillan; Col. K. R. Marshall; E. J. R. Mason; Rev. E. McDonald; E. G. McDougall; Joseph McGuire; Prof. T. F. McIlwraith; Dr. James M. McKay; Robert McKay; A. R. McKenzie; Dr. George A. McQuibban; Meaford Bird Club; J. C. Medcof; Robert Mellor; R. O. Merriman; R. W. Millard; C. S. Milne; Lorus J. Milne; J. T. Miner; Mrs. O. S. Mitchell; Edward Moonie; Dayton Murphy; Dr. A. W. H. Needler; W. A. Newcombe; Knud Nielsen; G. W. North; Ontario Fisheries Research Laboratory; Ontario Forestry Branch; Ontario Game and Fisheries Department; Oswald Ormandy; Miss L. J. Payne; E. S. Pentland; Mrs. Grant Peplar; Wm. Petrie; G. L. Pop; Dr. N. A. Powell; D. J. Price; H. V. Pritchard; A. Pullen; John Raeburn; J. W. Rainbow; W. E. Ricker; E. V. Rippon; C. B. Robb; W. H. Robb; E. Robertson; P. Robertson; Mrs. A. E. Robillard; E. R. Robinson; Royal Canadian Institute; Royal Ontario Museum of Palaeontology; Miss I. Rutledge; James Ruxton; Prof. R. M. Saunders; W. E. Saunders; James Savage; Robert Scadding; D. M. Scott; Dr. E. Seaborn; Mrs. A. Shaw; R. W. Sheppard; A. H. Shortt; H. M. Simpson; W. R. Skey; Miss P. Smalley; Eric Smith; G. F. M. Smith; R. A. Smith; Thomas Smith; L. L. Snyder; R. L. Snyder; J. D. Soper; H. H. Southam; Mrs. E. Spottiswood; W. B. Stallworthy; Dr. Fred Starr; A. St. Dennis; Jack Stege; Thos. & Walter Stevenson; George Stewart; Roy Stone; Douglas Sumner; H. W. Swaine; A. Swanson; A. Tallet; A. L. Tester; S. L. Thompson; G. C. Toner; Toronto Anglers' Association; Toronto Harbour Commission; Toronto Humane Society; Dr. H. K. Townes; Hubert Townson; John Townson; F. A. Urquhart; Dr. V. Vladykov; Dr. E. M. Walker; Sam Waller; John Wanless; Mrs. H. D. Warren; Rev. F. G. Weir; J. R. Westman; H. V. Williams; M. Williams; Harry Wise.

The library has been increased by the addition of 201 books and 3042 periodicals.

Material has been exchanged with museums or other scientific institutions in Australia, France, Hungary, Japan, six in the United States and four in Canada. Material required for research by scientists working in other institutions has been loaned to department of zoology, University of Michigan; Field

Museum of Natural History; United States Bureau of Biological Survey; National Museum of Canada; Ontario Department of Game and Fisheries and the Biological Board of Canada.

(23) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF GEOLOGY

(*Professor E. S. Moore*)

During the year the major portion of the work of organising the materials in storage has been finished. In the series of public lectures of a popular nature, bearing on the work of the Museum and provided for by the committee of directors, the Museum of Geology contributed three. Of these one was delivered by Dr. A. P. Coleman, former director, and two by the director.

A number of important additions have been made to the geological collections during the year and these may be designated as:

Donations:

Collection of talc from Madoc, Ont., by Mr. R. Taylor, Canadian Talc Co.

An exhibit of the Credit Valley sandstones used in the new Museum building, by Credit Valley Associated Quarries.

An exhibit of the marbles used in the Museum building, by Mr. Brooks, Italian Mosaic & Tile Co.

Concretions of various types from Blackburn, Ont., by Mr. A. E. Davidson; from Owen Sound, Ont., by Mr. W. J. Dowkes; and from Hastings County, Ont., by Rev. H. B. Herrington.

Queenston dolomite used in the new Museum building, by George Oakley & Sons.

A fine specimen of mineralised breccia from Goldie Township, Ont., by Dr. J. E. Thomson.

Columnar rhyolite of rare occurrence, from northern Ontario, by Dr. H. C. Laird.

A miner's candle-holder such as was formerly used in mines, by Mr. A. L. Reeve.

Collection of rocks and ores from Frontenac County, Ont., by Dr. G. S. MacKenzie.

Purchases:

Choice specimen of phlogopite mica and a quantity of zircon from Burgess Township, Ont.

Collection of ores and rocks from Australia, Africa, Brazil, Norway and Arizona.

A collection, including rare specimens, from the Tri-State mining district in Missouri, Kansas and Oklahoma.

Gold ore from O'Brien Gold Mines, Kewagama, Que.

A chart showing a geological section across the United States, prepared for the International Geological Congress.

A suite of rocks and ores from the Flin Flon and Amisk Lake areas in Manitoba.

Model of the Kilauea volcanic area in Hawaiian Islands.

Collections:

Marble, sodalite and other rocks from Haliburton County and Bancroft, Ont.

A section of the glacial and inter-glacial formations from the Don Valley Brick yards. The geological section in the Don Valley is a classical one, and it has attracted visitors from all parts of the world. The section for the Museum,

when completed, will show, approximately to scale, all the glacial and interglacial beds and some of their implications as to the time required for deposition and the climatic conditions of the Toronto region during the Pleistocene epoch.

(12) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF MINERALOGY

(*Director, Professor T. L. Walker*)

In the year under review the Museum has added to its great store of minerals and rocks by collection in the field, purchase, exchange, and by donations from friends. Professor A. L. Parsons, assistant director, spent a part of last summer collecting specimens in Eastern Ontario. It is the settled policy of the Museum to collect largely so as to be able to secure material which would be otherwise unobtainable, by exchange with similar institutions in other parts of the world. Already this plan has developed to the great advantage of our collections.

The exhibition gallery is now equipped with a balopticon which is in operation in the afternoons. The pictures shown are series of an educational nature so that these well labelled pictures provide silent lectures which attract many of those who visit this gallery.

A beginning has been made in the addition of fine specimens to the collections of gemstones, the purchases being made possible by the money provided by the bequest of the late Reuben Wells Leonard, Esq. This is the beginning of a collection to be known as the Leonard Collection of Gemstones.

The work of the last twenty-five years has given the Museum one of the finest gallery displays in America and it is hoped that in the near future scientific work may be made possible by provision of a small scientific staff and necessary equipment. At present the paid staff in this Museum consists of two non-scientific assistants.

(25) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY

(*Professor W. A. Parks*)

The chief installations in the galleries during the year were as follows:

(*a*) A complete skeleton of *Thespesius edmonti* prepared during 1933-34.
(*b*) Five heads of trachodont dinosaurs—*Gryposaurus notabilis*, *Corythosaurus casuarius*, *C. frontalis*, *C. brevicristatus*, *C. bicristatus;* the last three are new to science.
(*c*) Several fossil turtles from Alberta.
(*d*) Restorations in wax of Palaeozoic fossils.
(*e*) Miscellaneous invertebrates.

In addition to work connected with the above installations the vertebrate preparators have completed the preparation of a head of *Hypacrosaurus* and the skeletons of several turtles, also of part of a skeleton of a trachodont dinosaur intended for exchange with the Carnegie Museum, Pittsburgh, Pa.

The director has worked on new species of dinosaurs and on a large collection of Devonian stromatoporoids. Dr. M. Fritz has completed the revision of the collection of bryozoa and Mr. Weaver has revised all the filing cards of the vertebrata bringing the classification up to date. The usual expedition to the Red Deer River, Alberta, resulted in the acquisition of the material listed under "By collection" below.

The Museum of Palaeontology wishes to express its indebtedness to the Reuben Wells Leonard Bequest without which much of the above could not have been done.

The more important acquisitions during the year are as follows:

By donation

Megalomus canadensis—Mr. Armstrong, Dundalk, Ontario.
Books and pamphlets from the library of the late Dr. B. A. Bensley.
Ear bone of whale—Mr. S. C. Brazier, Toronto.
Jaw and vertebrae of ground hog—Mr. T. R. Copps, Hornpayne, Ontario.
Collection of carboniferous plants—Dr. W. E. B. Hall.
Teeth of carnivorous dinosaurs—Mr. B. A. Kirkeby, Craigmyle, Alta.
61 volumes of U.S. Geological Survey publications—Mr. W. L. Lawson, Colorado Springs, Colorado.
Graptolites and worms—Mr. A. S. Lees, Oak Lawn, Ill.
Collection of sharks' teeth from Miocene of Florida—Mr. J. T. MacBride, Montclair, N.J.
Columnaria halli—Mr. M. E. Maybee, Trenton, Ontario.
Endoceras proteiforme—Mr. R. W. McCabe.
Fossil wood (*Callixylon*) from Devonian of Ontario—Mr. W. J. Patterson, London, Ontario.
Collection of vertebrates—Miss A. Pride, Toronto.
Series of publications—Provincial Museum, Toronto.
Actinoceras crebriseptum—Mr. E. V. Rippon, Toronto.
Devonian fossil wood—Professor J. W. Russell, University of Western Ontario, London, Ontario.
Old reports, Geol. Surv. Canada—Mr. T. N. Smith, Toronto.
Large collection of books—Mr. A. T. Wilgress, Legislative Library, Toronto.

By purchase

Nautilus magister—Mr. R. R. Hibbard, Buffalo, N.Y.
Set of rare lower cretaceous pelecypods and bryozoa—J. B. Litsey, Dallas, Texas.
Mastodon tooth from near Chicago—Mr. L. C. Laishley, Toronto.
Tibia and part of femur of mammoth—Mr. Roy Miners, Norwich, Ont.

By exchange

Skeleton of *Stenomylus*, head of *Promerychochoerus*—Carnegie Museum, Pittsburgh, Pa.
Vertebrates and invertebrates—Field Museum, Chicago.
11 Vols. Royal Society of Canada—Dr. J. C. Sproule, Toronto.

By collection

The chief material obtained by the expedition to the Red Deer River in 1934 under the direction of Mr. Levi Sternberg was as follows:

(*a*) Nine Cretaceous turtles, some new to science.
(*b*) *Corythosaurus bicristatus*, head and jaws.
(*c*) *Corythosaurus casuarius*, head and jaws.
(*d*) *Corythosaurus brevicristatus*, head and jaws.
(*e*) *Eodelphis browni*, jaws.
(*f*) Rear part of crested trachodont dinosaur.
(*g*) Rear part of a bird dinosaur.
(*h*) Part of head of an horned dinosaur.
(*i*) Scattered head of a carnivorous dinosaur.
(*j*) *Gryposaurus notabilis*, head and jaws.

APPENDIX B

REPORT OF THE REGISTRAR

(*A. B. Fennell, Esq., M.A.*)

I beg to submit the following statistics for the year ending June 30th, 1935:—

(*a*) Distribution of the staff of the University and University College (furnished by the Bursar).
(*b*) Distribution of the staffs of the federated Arts Colleges (furnished by the Registrars of the colleges).
(*c*) Registration of students by faculties and years.
(*d*) Enrolment in the Arts Colleges (furnished by the Registrars of the colleges).
(*e*) Enrolment in the university departments in Arts (furnished by the departments).
(*f*) Registration in courses in the Faculty of Arts.
(*g*) Registration in courses in the School of Graduate Studies (furnished by the Secretary of the School).
(*h*) Results of annual examinations (furnished by the Secretaries of the faculties).
(*i*) Admission to degrees.
(*j*) Geographical distribution of students (furnished by the Secretaries of the faculties).

(*a*) Distribution of the Staff of the University and University College:

	Professors	Associate Professors	Assistant Professors	Associates	Lecturers	Directors	Assistant Directors	Instructors	Other Sessional Appointments
University (Faculty of Arts).....	42	31	25	—	34	—	—	—	133
University College.....	15*a*	8	8	—	11	—	—	—	2
Faculty of Medicine.....	22*b*	9	25	33	21	—	—	—	210*c*
Faculty of Applied Science.....	15	10	9	—	20*d*	—	—	—	48*e*
Faculty of Household Science....	2	—	2	—	5	—	—	—	7
Ontario College of Education....	9	4	3	—	7	—	—	36*j*	—
Faculty of Forestry.....	2	2	1	—	4	—	—	—	1*f*
Faculty of Music.....	—	—	—	—	4	—	—	—	1
Faculty of Dentistry.....	13	5*d*	1*d*	19	2*d*	—	—	—	5*g*
Social Science.....	—	—	—	—	16*h*	1*b*	1	—	1
School of Nursing.....	—	—	—	—	32*i*	1	1	—	2

a 1 also in University
b 1 also in Arts
c 3 also in Arts; 2 also in Dentistry
d 1 also in Medicine
e 2 also in Arts
f 1 also in Arts and Dentistry
g 1 also in Arts and Forestry
h 1 also in Dentistry
i 13 also in Medicine; 1 also in Dentistry; 1 also in Ontario College of Education
j 3 also in University College

(*b*) Distribution of the Staffs of the Federated Arts Colleges:

	Victoria College	Trinity College	St. Michael's College
Professors.....	14	10	12
Associate professors.....	7	4	11
Assistant professors.....	1	..	
Lecturers.....	8	6	11
Instructors.....	5	..	8
Fellows.....	1	2	..
Readers.....	2	2	..

(c) Registration of Students by Faculties and Years:

The number of students registered in the university, in colleges and faculties, in the session 1934-35 was 7,241, distributed as follows:

				Men	Women	Total
Faculty of Arts				2,169	1,554	3,723
University of Toronto	571	236	807			
University College	731	549	1,280			
Victoria College	467	520	987			
Trinity College	228	152	380			
St. Michael's College	182	107	289			
Registered twice	10	10	20			
Faculty of Medicine				783	59	842
Faculty of Applied Science and Engineering				791	5	796
Faculty of Household Science				...	45	45
Ontario College of Education				545	439	984
Faculty of Forestry				52	...	52
Faculty of Music				25	10	35
School of Graduate Studies				438	176	614
Faculty of Dentistry				187	25	212
Registered twice				51	11	62
				4,939	2,302	7,241

In departments there were registered 470, distributed as follows:

Department of Social Science	9	104	113
School of Nursing	...	324	324
University Extension (Occupational Therapy)	...	20	20
University Extension (Physiotherapy)	...	13	13
	9	461	470

The grand total of registration for the whole university was 7,711, of whom 4,948 were men and 2,763 were women.

In addition there were 6,418 persons registered in the Department of University Extension in courses and at provincial centres which are referred to in detail in Appendix A (14).

The figures may be further analysed as follows:

Faculty of Arts

University of Toronto

	Men	Women	Total
Teachers' Classes and Summer Session	339	206	545
Occasional Arts students	232	30	262
	571	236	807

University College

	Men	Women	Total
First year undergraduates	245	177	422
Second year undergraduates	179	157	336
Third year undergraduates	189	143	332
Fourth year undergraduates	96	54	150
Occasional students	22	18	40
	731	549	1,280

Victoria College

	Men	Women	Total
First year undergraduates	148	166	314
Second year undergraduates	140	142	282
Third year undergraduates	118	141	259
Fourth year undergraduates	55	62	117
Occasional students	6	9	15
	467	520	987

Trinity College

	Men	Women	Total
First year undergraduates	89	55	144
Second year undergraduates	71	47	118
Third year undergraduates	53	33	86
Fourth year undergraduates	14	16	30
Occasional students	1	1	2
	228	152	380

St. Michael's College

	Men	Women	Total
First year undergraduates	88	39	127
Second year undergraduates	59	31	90
Third year undergraduates	32	33	65
Fourth year undergraduates	2	2	4
Occasional students	1	2	3
	182	107	289

Faculty of Medicine

	Men	Women	Total
First year undergraduates	126	8	134
Second year undergraduates	155	13	168
Third year undergraduates	135	8	143
Fourth year undergraduates	117	10	127
Fifth year undergraduates	125	7	132
Sixth year undergraduates	103	9	112
Candidates for Degree of B.Sc. (Med.)	4	..	4
Candidates for D.P.H.	12	..	12
Diploma in Radiology	1	..	1
Graduate students	2	3	5
Occasional students	3	1	4
	783	59	842

Faculty of Applied Science and Engineering

	Men	Women	Total
First year undergraduates	221	..	221
Second year undergraduates	188	1	189
Third year undergraduates	196	2	198
Fourth year undergraduates	179	1	180
Fifth year undergraduates	7	1	8
	791	5	796

Faculty of Household Science

	Men	Women	Total
First year undergraduates	..	12	12
Second year undergraduates	..	8	8
Third year undergraduates	..	20	20
Fourth year undergraduates	..	2	2
Occasional students	..	3	3
	..	45	45

Ontario College of Education

	Men	Women	Total
Students in attendance	210	287	497
Extra-mural students	133	115	248
Students in B.Paed. course	213	39	252
Registered twice	11	2	13
	545	439	984

Faculty of Forestry

	Men	Women	Total
First year undergraduates	7	...	7
Second year undergraduates	10	...	10
Third year undergraduates	13	...	13
Fourth year undergraduates	22	...	22
	52	...	52

Faculty of Music

	Men	Women	Total
First year undergraduates	5	4	9
Second year undergraduates	9	3	12
Third year undergraduates	11	3	14
	25	10	35

School of Graduate Studies

	Men	Women	Total
Candidates for Ph.D	124	21	145
Candidates for M.A	96	62	158
Candidates for M.S	6	...	6
Candidates for M.A.Sc	11	...	11
Candidates for C.E	1	...	1
Candidates for E.E	1	...	1
Candidates for D.Paed	77	8	85
Candidates for M.Sc.F	1	...	1
Candidates for M.S.A	13	...	13
Candidates for D.V.Sc	4	...	4
Candidates for M.V.Sc	1	...	1
Candidates for Mus. Doc	4	...	4
Graduate students	99	85	184
	438	176	614

Faculty of Dentistry

	Men	Women	Total
First year undergraduates	30	1	31
Second year undergraduates	24	1	25
Third year undergraduates	41	...	41
Fourth year undergraduates	42	...	42
Fifth year undergraduates	43	1	44
Candidates for Degree of B.Sc. (Dent.)	7	...	7
Dental Nurses	...	22	22
	187	25	212

Department of University Extension

	Men	Women	Total	Grand Total
B.A. Course				
Summer Session:				
Regular students	141	96	237	...
Occasional students	7	6	13	250
Teachers' Classes:				
Toronto:				
Regular students	230	122	352	...
Occasional students	5	3	8	360
Specialists' Courses				
Summer Session:				
Regular students	24	6	30	30
Registered twice	68	27	95	95
	339	206	545	545

Department of Social Science

	Men	Women	Total
First year full-time students	8	42	50
Second year full-time students	...	24	24
"Apprentice" students (Second year)	...	5	5
Part-time students	1	33	34
	9	104	113

School of Nursing

	Men	Women	Total
Full-time students	...	74	74
Part-time students	...	250	250
	...	324	324

(*d*) Enrolment in the Arts Colleges

(1) University College:

	Greek	Latin	Greek and Roman History	Oriental Languages	Oriental History	English	German	German (Sc.)	French	Ethics	Oriental Literature
First Year—											
Pass	13	17	8	26	17	201	27	75	287	23	105
Honour	4	21	69	3	..	35	30	..	43	13	..
Second Year—											
Pass	9	12	22	12	14	159	21	43	173	46	92
Honour	8	32	14	1	..	47	22	..	42	..	..
Third Year—											
Pass	7	20	57	3	12	114	10	..	83	38	100
General	..	..	..	..	..	4	1	..	4	..	..
Honour	6	27	20	2	..	48	7	..	20	12	..
Fourth Year—											
Pass	..	..	23	..	..	..	5	..	1	..	38
General	..	..	..	..	..	1	..	..	3	..	..
Honour	3	14	4	..	..	40	9	..	16	3	..
Totals—											
Pass	29	49	110	46	43	474	63	118	544	107	335
General	..	..	..	..	..	5	1	..	7	..	..
Honour	21	94	107	6	..	170	68	..	121	28	..
Teachers' Classes	..	25	..	..	..	50	5	..	62	35	..
Graduate Studies	5	2	4	13	..	69	6	..	12	..	..
Other Faculties	..	..	..	..	..	..	275	..	90	..	..
Grand Total	55	170	221	65	43	768	418	118	836	170	335

(2) Victoria College:

	Greek	Latin	Greek and Roman History	Oriental Languages	Oriental History	English	German	German (Sc.)	French	Ethics	Religious Know.
First Year—											
Pass	5	16	33	..	3	155	15	43	180	9	135
Honour	8	26	52	..	..	49	31	..	51	12	..
Second Year—											
Pass	4	16	25	1	4	122	14	24	100	30	128
Honour	10	26	9	..	..	38	17	..	32	1	..
Third Year—											
Pass	3	13	61	1	3	100	3	..	64	52	94
General	..	1	2	..	..	4	..	..	2	..	..
Honour	8	15	8	..	..	24	14	..	18	11	..
Fourth Year—											
Pass	..	..	25	..	..	..	..	..	..	10	16
General	..	..	..	..	..	2	1	..	2	..	..
Honour	14	16	14	..	..	20	11	..	18	4	..
Totals—											
Pass	12	45	144	2	10	377	32	67	344	101	373
General	..	1	2	..	..	6	1	..	4	..	..
Honour	40	83	83	..	..	131	73	..	119	28	..
Grand Total	52	129	229	2	10	514	106	67	467	129	373

(3) Trinity College:

	Greek	Latin	Greek and Roman History	Oriental Languages	Oriental History	English	German	German (Sc.)	French	Ethics	Religious Know.
First Year—											
Pass	5	4	5	..	..	66	13	19	73	9	137
Honour	8	10	15	1	1	13	2	..	14	6	..
Second Year—											
Pass	3	8	6	..	..	48	4	11	30	23	111
Honour	5	12	5	..	..	15	2	..	11	3	..
Third Year—											
Pass	1	5	4	..	..	33	4	..	27	13	79
General	..	..	..	..	..	2	..	..	..	..	..
Honour	3	3	3	..	..	8	4	..	6	..	..
Fourth Year—											
Pass	..	..	..	..	..	..	..	..	..	..	25
Honour	3	3	3	..	..	4	2	..	6	..	..
Totals—											
Pass	9	17	15	..	..	147	21	30	130	45	352
General	..	..	..	..	..	2	..	..	..	..	..
Honour	19	28	26	1	1	40	10	..	37	9	..
Grand Total	28	45	41	1	1	189	31	30	167	54	352

(4) St. Michael's College:

	Greek	Latin	Greek and Roman History	English	German	German (Sc.)	French	Ethics	Philosophy	Religious Know.
First Year—										
Pass	2	46	8	58	7	6	51	..	57	89
Honour	2	5	8	7	2	..	11	..	6	..
Second Year—										
Pass	1	36	3	51	5	6	40	23	39	62
Honour	1	4	3	4	2	..	6	7	7	..
Third Year—										
Pass	..	29	..	33	1	3	32	13	30	42
Honour	..	..	..	..	..	..	..	6	6	..
Fourth Year—										
Pass	..	1	..	..	..	..	..	..	..	4
Honour	1	1	1	1	1	..	2	1	1	..
Totals—										
Pass	3	112	11	142	13	15	123	36	126	197
Honour	4	10	12	12	5	..	19	14	20	..
Grand Total	7	122	23	154	18	15	142	50	146	197

(e) Enrolment in the University Departments in Arts:

The following tables exhibit the numbers attending lectures in the university departments in the Faculty of Arts, together with the number of those taking the practical work in the laboratories :

Department of Mathematics

	Lecture Courses					
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours	
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	137	..	..	55	..	54
Second Year	141	81	..	13	..	43
Third Year	89	38	..	13	..	13
Fourth Year	3	1	..	..	..	6
Teachers' Classes	5	..	..	..	..	..
Occasional Students	..	..	..	5	..	..
Faculty of Medicine—						
First Year	22	..	..	..	..	..
Faculty of Applied Science and Engineering—						
First Year	..	..	220	..	..	..
Second Year	155	..	..	..	..	..
Faculty of Forestry—						
First Year	..	..	7	..	..	..
School of Graduate Studies	..	18	..	7	..	..
College of Optometry of Canada	15	..	..	..	..	..
Totals	567	138	227	93	..	116

Department of Applied Mathematics

	Pass and Honour	Honour
Faculty of Arts—		
Second Year	..	55
Third Year	..	32
Fourth Year	..	13
Occasional Students	..	5
Faculty of Applied Science and Engineering—		
Second Year	38	..
School of Graduate Studies	..	24
Totals	38	129

Department of Astronomy

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	15	..	..	..
Second Year	56	..	..	6
Third Year	2	..	18	18
Fourth Year	..	1	2	3
Occasional Students	..	..	1	..
Faculty of Applied Science and Engineering—				
Second Year	11	..	..	..
School of Graduate Studies	..	..	3	3
Department of University Extension—				
Evening Classes	48	..	..	..
Totals	132	1	24	30

Department of Physics

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	181	..	188	252
Second Year	45	..	153	176
Third Year	33	..	32	56
Fourth Year	..	..	28	21
Teachers' Classes	17	..	..	17
Summer Session (Specialists' Courses)	..	..	20	19
Occasional Students	..	..	4	4
Faculty of Medicine—				
First Year	..	140	..	140
Diploma in Radiology	..	1	..	1
Faculty of Applied Science and Engineering—				
First Year	..	..	12	12
Faculty of Household Science—				
First Year	..	..	14	14
Faculty of Forestry—				
First Year	..	7	..	6
Faculty of Dentistry—				
First Year	..	31	..	31
School of Graduate Studies	..	..	60	26
College of Optometry of Canada	..	28	..	28
Department of University Extension—				
Physiotherapy	13	..	..	13
Totals	289	207	511	816

Department of Biology

	Lecture Courses				Laboratory Courses	
	1 or 2 or 3 hours		4 or 5 or 6 hours			
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	238	125	..	..	121	125
Second Year	62	106	..	..	62	106
Third Year	54	48	..	..	54	16
Fourth Year	2	8	..	5	2	13
Occasional Students	..	2	..	..	..	..
Faculty of Medicine—						
First Year	..	140	..	..	..	140
Third Year	..	21	..	..	..	7
Faculty of Household Science—						
First Year	..	11	..	..	..	11
Faculty of Forestry—						
First Year	..	8	..	..	..	8
Fourth Year	..	22	..	..	..	23
Faculty of Dentistry—						
First Year	..	31	..	..	..	31
School of Graduate Studies	..	..	..	..	..	45
Department of Social Science—						
Second Year	..	5	..	..	..	..
School of Nursing	..	16	..	..	..	16
College of Optometry of Canada	..	23	..	..	..	23
Totals	356	566	..	5	239	563

Department of Botany

	Lecture Courses		Laboratory Courses	
	1 or 2 or 3 hours			
	Pass	Honour	Pass	Honour
Faculty of Arts—				
First Year	145	127	28	127
Second Year	13	13	12	55
Third Year	9	11	9	11
Fourth Year	..	13	..	13
Occasional Student	..	1	..	1
Faculty of Applied Science and Engineering—				
First Year	..	..	81	..
Faculty of Household Science—				
First Year	11	..	11	..
Second Year	8	..	8	..
Faculty of Forestry—				
First Year	..	7	..	7
Fourth Year	..	..	..	22
School of Graduate Studies	..	..	..	32
Ontario College of Pharmacy				
First Year	107	..	107	..
Second Year	..	..	78	..
Totals	293	172	334	268

Department of Chemistry

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	187	..	191	274
Second Year	58	..	146	180
Third Year	14	..	24	34
Fourth Year	..	..	15	15
Occasional Student	3	..	..	..
Faculty of Medicine—				
First Year	..	143	..	143
Second Year	..	138	..	138
Faculty of Applied Science and Engineering—				
First Year	..	95	..	95
Second Year	..	69	..	69
Third Year	..	121	..	121
Fourth Year	..	5	..	5
Faculty of Household Science—				
First Year	..	11	..	11
Second Year	..	7		..
Faculty of Forestry—				
First Year	8	..	..	8
Second Year	9	..	..	..
Faculty of Dentistry—				
First Year	..	31	..	31
Second Year	..	25	..	25
Third Year	..	41	..	41
School of Graduate Studies	..	..	35	28
Ontario College of Pharmacy—				
First Year	108	..	..	108
Second Year	77	..	..	77
College of Optometry of Canada	11	..	..	..
Totals	475	686	411	1,403

Department of Geology and Palaeontology

	Lecture Courses						Laboratory Courses	
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours			
	Pass	Honour	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—								
First Year	139	74	..	..	..	..	..	..
Second Year	..	16	13	..	..	..	13	16
Third Year	20	..	..	..	..	5	20	5
Fourth Year	1	6	..	..	..	5	1	5
Teachers' Classes..	60	..	..	..	..	..	..	60
Summer Session (Teachers' Course)	50	..	..	..	..	..	..	50
Occasional Students	..	1	..	..	..	..	..	1
Faculty of Applied Science and Engineering—								
Second Year	..	35	..	..	..	..	..	3
Third Year	..	44	..	..	..	..	..	22
Fourth Year	..	..	..	10	..	..	..	10
Faculty of Forestry—								
Second Year	10	..	..	..	..	..	..	..
Third Year	13	..	..	..	..	..	13	..
School of Graduate Studies	..	8	..	2	..	9	..	15
Totals	293	184	13	12	..	19	157	77

Department of Mineralogy and Petrography

	Pass	Pass and Honour	General	Honour	Laboratory
Faculty of Arts—					
First Year	25	..	..	..	25
Second Year	3	..	..	39	42
Third Year	..	..	..	16	7
Fourth Year	..	..	1	5	6
Teachers' Classes	130	..	..	..	130
Occasional Students	..	..	..	1	1
Faculty of Applied Science and Engineering—					
First Year	..	151	..	..	151
Second Year	..	32	..	..	32
Third Year	..	22	..	..	22
Fourth Year	..	1	..	..	1
Faculty of Forestry—					
Second Year	..	9	..	..	9
School of Graduate Studies	..	..	..	10	5
Totals	158	215	1	71	431

Department of Philosophy

	Pass	Pass and Honour	Honour
Faculty of Arts—			
First Year	61	..	82
Second Year	149	..	84
Third Year	234	41	..
Fourth Year	46	24	..
Teachers' Classes	35	..	..
School of Graduate Studies	..	..	52
Totals	525	65	218

Department of Psychology

	Lecture Courses						Laboratory Courses	
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours			
	Pass	Honour	Pass	Honour	Pass or General	Honour	Pass	Honour
Faculty of Arts—								
First Year	151	..	..	30	..	..	..	..
Second Year	135	4	17	2	..	2	95	6
Third Year	111	7	..	8	..	6	19	14
Fourth Year	43	..	..	2	..	5	..	7
Teachers' Classes	29	..	..	..	..	..	..	29
Occasional Students	3	..	..	..	..	..	..	..
Faculty of Medicine—								
Second Year	..	135	..	..	..	..	..	..
Third Year	23	..	..	..	..	..	23	..
Fourth Year	29	..	..	..	..	..	..	..
Faculty of Household Science	18	..	..	..	..	..	..	..
School of Graduate Studies	..	11	..	7	..	26	..	12
Department of Social Science—								
First Year	32	..	..	..	..	..	..	..
Second Year	24	..	..	..	..	..	..	..
School of Nursing	26	..	..	..	..	..	..	..
College of Optometry of Canada	21	..	..	..	..	..	..	..
Department of University Extension—								
Occupational Therapy	13	..	..	..	..	..	..	..
Physiotherapy	13	..	..	..	..	..	..	..
Evening Classes	220	..	..	..	..	..	..	..
Centralised Pupil Nurses	163	..	..	..	..	..	..	..
Totals	1,054	157	17	49	..	39	137	68

Department of Political Science

	Lecture Courses					
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours	
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	149	118	2	55	..	61
Second Year	214	12	6	..	..	83
Third Year	190	4	..	..	22	85
Fourth Year	..	..	..	..	..	70
Occasional Students	8	..	..	..	..	..
Faculty of Household Science—						
Third Year	10	..	..	..	..	..
Fourth Year	10	..	..	..	..	..
Faculty of Forestry—						
Third Year	13	..	..	..	..	..
Department of Social Science—						
First Year	..	52	..	..	..	..
Second Year	..	32	..	..	..	..
Totals	594	218	8	55	22	299

Department of Law

	Pass	Honour
Faculty of Arts—		
First Year	..	103
Second Year	..	27
Third Year	..	16
Fourth Year	..	13
Faculty of Applied Science and Engineering—		
Third Year	52	..
Faculty of Forestry—		
Third Year	14	..
School of Graduate Studies	..	20
Department of University Extension—		
Evening Classes	117	..
Bachelor of Laws Course	..	9
Totals	183	188

Department of Modern History

	Lecture Courses					
	1 or 2 or 3 hours		4 or 5 or 6 hours		7 or more hours	
	Pass	Honour	Pass	Honour	Pass	Honour
Faculty of Arts—						
First Year	..	126	179	7	..	..
Second Year	138	22	..	65	..	9
Third Year	120	4	..	47	..	8
Fourth Year	8	19	..	18	..	4
Teachers' Classes	159	..	..	..	..	..
Teachers' Classes, Correspondence	110	..	..	..	..	..
Occasional Students	2	2	..	18	..	..
School of Graduate Studies	..	..	..	..	..	26
Department of University Extension Evening Classes	58	..	..	..	..	..
Totals	595	173	179	155	..	47

Department of Italian and Spanish

	Italian		Spanish	
	Pass	Honour	Pass	Honour
Faculty of Arts—				
First Year	22	4	82	39
Second Year	16	5	73	28
Third Year	7	2	48	8
Fourth Year	..	7	..	15
School of Graduate Studies	..	1	..	5
Totals	45	19	203	95

Methods of Research, Bibliography—9.

Department of Household Science
(Faculty of Household Science)

	Pass	Pass and Honour	Honour	Laboratory
Faculty of Arts—				
First Year	..	..	44	..
Second Year	14	..	44	58
Third Year	14	1	48	63
Fourth Year	..	..	38	38
Occasional Students	..	2	..	2
Faculty of Household Science—				
First Year	..	12	..	..
Second Year	..	8	..	8
Third Year	14	..	6	20
Fourth Year	..	..	2	2
Occasional Student	..	1	..	..
School of Graduate Studies	..	..	2	2
School of Nursing	29	..	..	29
Totals	71	24	184	222

Department of Food Chemistry
(Faculty of Household Science)

	Pass	Honour	Laboratory
Faculty of Arts—			
Second Year	26	..	26
Third Year	19	12	31
Fourth Year	..	36	36
Faculty of Household Science—			
Second Year	8	..	8
Third Year	14	..	14
Fourth Year	..	2	2
School of Graduate Studies	..	3	3
Candidates for Specialist Certificates	..	2	2
Totals	67	55	122

Department of Anthropology

	Pass	Pass and Honour	Honour
Faculty of Arts—			
First Year	120	63	32
Second Year	..	2	6
Third Year	..	5	10
Fourth Year	..	70	..
Occasional Student	..	..	1
Faculty of Medicine—			
Third Year	15	..	..
School of Graduate Studies	4	..	..
Department of Social Science—			
First Year	45	..	..
Physical Education for Women	3	..	..
Totals	187	140	49

(f) Registration in Courses in the Faculty of Arts

Courses	First Year				Second Year				Third Year				Fourth Year				
	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	Totals
Pass	154	135	62	85	143	113	46	63	137	117	38	42	..	..	..	..	1,135
General	..	..	..	..	..	..	..	..	6	5	2	..	5	4	..	..	22
Classics	4	5	8	6	9	7	5	..	6	5	4	..	3	9	3	1	75
Greek and Hebrew	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2
Oriental Languages	4	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	6
Hebrew and Ancient History	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Latin (French or Greek Option)	4	2	3	4	..	..	..	..	..	..	..	..	..	..	..	..	13
Latin (French or Greek Option) Div. I	..	..	..	..	6	..	2	1	3	..	..	3	..	..	..	..	15
Latin (French or Greek Option) Div II	..	..	..	..	..	3	..	..	..	3	..	..	..	5	..	..	11
Modern Languages	30	33	6	5	23	17	5	3	17	18	7	4	13	18	6	2	207
English and History	12	20	5	3	15	17	5	2	17	13	2	3	19	13	4	..	150
Modern History	2	3	2	..	1	4	3	1	2	3	3	..	1	2	1	..	28
Political Science and Economics	27	9	16	2	10	12	16	1	15	12	8	..	10	6	2	..	146
Sociology	10	10	1	..	..	3	1	..	4	4	..	..	..	..	..	..	33
Law	29	10	7	1	15	5	3	..	7	3	6	..	6	3	3	..	98
Philosophy	3	..	1	3	..	1	..	5	5	2	..	5	1	..	..	1	27
Philosophy (English or History Option)	5	1	4	6	6	9	3	2	2	5	1	..	2	4	..	..	61
Psychology	7	2	1	..	2	..	..	..	5	1	..	..	2	3	..	..	24
Mathematics and Physics	28	16	9	3	27	14	3	4	..	..	..	..	..	..	..	..	104
Mathematics and Physics (Div. I)	..	..	..	..	..	..	..	..	7	4	..	..	..	..	..	..	11
Mathematics and Physics (Div. II)	..	..	..	..	..	..	..	..	10	1	..	2	3	2	1	..	19
Mathematics and Physics (Div. III)	..	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	3
Mathematics and Physics (Div. IV)	..	..	..	..	..	..	..	..	2	1	1	1	6	3	..	..	14
Mathematics and Physics (Div. V)	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2
Physics and Chemistry	..	..	..	..	4	3	..	..	2	1	..	..	3	..	..	..	13
Physics and Geology	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Science	46	23	9	3	..	..	..	..	..	..	..	..	..	..	..	..	81
Physics	..	..	..	..	1	3	2	..	..	..	..	..	..	..	..	..	6
Biology	..	..	..	..	1	1	3	..	5	5	..	..	8	1	..	..	24
Physiology and Biochemistry	..	..	..	..	4	2	2	..	3	..	1	..	2	1	..	..	15
Biological and Medical Sciences	..	..	..	..	19	13	5	4	18	12	3	2	12	1	1	..	90
Chemistry	..	..	..	..	10	8	2	3	6	3	..	..	4	..	1	..	37
Chemistry, Mineralogy and Geology	..	..	..	..	1	2	1	..	..	..	..	..	..	..	..	..	4
Chemistry, Mineralogy and Geology, Div. I	..	..	..	..	..	..	..	..	1	..	..	..	1	2	..	..	4
Chemistry, Mineralogy and Geology, Div. II	..	..	..	..	..	..	..	..	1	1	..	..	..	2	..	..	4
Geology and Mineralogy	..	..	..	..	2	2	..	..	..	1	..	..	1	1	..	..	7
Science (General)	..	..	..	..	2	1	..	..	..	2	..	..	..	..	..	..	5
Food Chemistry	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2
Household Economics	18	21	3	2	17	22	5	..	24	19	4	1	15	16	3	..	170
Commerce and Finance	40	12	5	4	17	20	6	1	24	18	6	2	29	18	5	..	207
Registered twice	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Totals	422	314	144	127	336	282	118	90	332	259	86	65	150	117	30	4	2,876

(g) Registration in Courses in the School of Graduate Studies

Department	Ph.D.	M.A.	M.S.	M.A. Sc.	C.E.	E.E.	D. Paed.	M.Sc. F.	M.S.A.	M.V. Sc.	D.V. Sc.	Mus. Doc.	Grad. Stud.
Anatomy	..	1	..	..	..	..	..	..	..	..	..	..	..
Applied Mathematics	1	1	..	..	..	..	..	..	..	..	..	..	4
Anthropology	..	..	..	..	..	..	..	..	..	..	..	..	1
Architecture	..	..	..	..	..	..	..	..	..	..	..	..	1
Astronomy	..	3	..	..	..	..	..	..	..	..	..	..	..
Biochemistry	7	3	..	..	..	..	..	..	..	..	..	..	2
Biology	18	3	..	..	..	..	..	..	5	..	..	..	3
Botany	14	2	..	..	..	..	..	..	5	..	..	..	2
Chemistry	21	11	..	..	..	..	..	..	2	..	..	..	1
Chemical Engineering	3	..	..	5	..	..	..	..	..	..	..	..	..
Civil Engineering	..	..	..	1	1	..	..	..	..	..	..	..	..
Classics	2	10	..	..	..	..	..	..	..	..	..	..	9
Educational Theory	2	1	..	..	..	..	..	..	..	..	..	..	1
Electrical Engineering	..	..	..	3	..	1	..	..	..	..	..	..	..
English	..	15	..	..	..	..	..	..	..	..	..	..	49
Epidemiology and Biometrics	2	..	..	..	..	..	..	..	..	..	..	..	..
Food Chemistry	..	1	..	..	..	..	..	..	..	..	..	..	2
Forestry	..	..	..	..	..	..	..	1	..	..	..	..	..
Geology and Palaeontology	8	2	..	..	..	..	..	..	..	..	..	..	3
Germanic Languages	..	3	..	..	..	..	..	..	..	..	..	..	6
History	6	14	..	..	..	..	..	..	..	..	..	..	2
Household Science	..	2	..	..	..	..	..	..	..	..	..	..	..
Law	1	13	..	..	..	..	..	..	..	..	..	..	4
Mathematics	1	3	..	..	..	..	..	..	..	..	..	..	5
Mechanical Engineering	2	..	..	..	..	..	..	..	..	..	..	..	..
Mineralogy	2	..	..	..	..	..	..	..	..	..	..	..	..
Mining Engineering	..	..	..	2	..	..	..	..	..	..	..	..	..
Music	..	..	..	..	..	..	..	..	..	..	..	4	..
Pathology and Bacteriology	3	2	..	..	..	..	..	..	..	..	..	..	..
Pathological Chemistry	2	2	..	..	..	..	..	..	..	..	..	..	1
Pedagogy	..	..	..	..	..	..	85	..	..	..	..	..	..
Philosophy	12	11	..	..	..	..	..	.	..	..	..	..	24
Physics	17	8	..	..	..	..	..	..	..	..	..	..	3
Physiology	6	3	..	..	..	..	..	..	..	..	..	..	1
Political Science	3	10	..	..	..	..	..	..	1	..	..	..	9
Preventive Dentistry	1	..	..	..	..	..	..	..	..	..	..	..	..
Psychiatry	..	..	..	..	..	..	..	..	..	..	..	..	1
Psychology	2	14	..	..	..	..	..	..	..	..	..	..	28
Romance Languages	2	7	..	..	..	..	..	..	..	..	..	..	19
Semitic Languages	5	9	..	..	..	..	..	..	..	..	..	..	..
Surgery	..	..	6	..	..	..	..	..	..	..	..	..	..
Veterinary Science	..	..	..	..	..	..	..	..	..	1	4	..	..
Special Committees	2	4	..	..	..	..	..	..	..	..	..	..	3
Totals	145	158	6	11	1	1	85	1	13	1	4	4	184

(*h*) Results of the Annual Examinations

FACULTY OF ARTS

First Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Deferred	Debarred
Pass	..	140	130	59	80	409	258	74	77	3	..	33
Supplementals	..	22	23	7	8	60	43	17	..	..	..	..
Classics	..	4	5	8	2	19	19	..	..	..	..	..
Oriental Languages	..	3	..	2	..	5	5	..	..	..	..	..
Latin (French or Greek Option)	..	3	1	3	3	10	9	1	..	..	..	1
Modern Languages	..	30	32	4	5	71	55	3	13	3	..	..
English and History	..	12	19	4	3	38	28	..	10	..	..	..
Modern History	..	2	3	2	..	7	4	1	2	..	..	..
Political Science and Economics	..	24	9	16	2	51	33	9	9	..	4	4
Sociology	..	10	10	1	..	21	18	..	3	..	..	..
Law	..	24	10	7	1	42	33	5	4	1	..	2
Philosophy	..	2	..	1	3	6	4	1	1	1	..	..
Philosophy (English or History Option)	..	5	12	5	6	28	22	..	6	2	..	..
Psychology	..	7	3	1	..	11	9	1	1	1	..	..
Mathematics and Physics	..	26	15	9	3	53	32	5	16	1	..	2
Science	..	37	16	6	1	60	32	8	20	..	..	3
Household Economics	..	18	20	3	2	43	31	9	3	..	1	4
Commerce and Finance	..	39	12	5	4	60	35	9	16	1	4	6
Occasional Students	3	..	1	..	..	4	4	..	..	..	..	..
Registered twice	..	1	..	..	..	1	1	..	..	..	..	..
Totals	3	407	321	143	123	997	673	143	181	13	9	55

Second Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Deferred	Debarred
Pass	..	129	110	46	58	343	258	54	31	7	..	15
Supplementals	..	23	10	7	5	45	32	13	..	..	..	..
Classics	..	9	6	5	..	20	17	..	3	..	..	1
Hebrew and Ancient History	..	1	..	..	..	1	1	..	..	..	..	..
Latin (French or Greek Option) Div. I.	..	6	..	2	1	9	7	..	2	1	..	..
Latin (French or Greek Option) Div. II.	..	..	3	..	..	3	..	..	3	..	..	..
Modern Languages	..	23	16	3	3	45	41	2	2	1	..	..
English and History	..	15	17	5	2	39	35	2	2	1	..	..
Modern History	..	1	4	3	1	9	9	..	..	1	..	..
Political Science and Economics	..	10	10	15	1	36	25	3	8	1	1	2
Sociology	..	..	3	1	..	4	4	..	..	..	..	..
Law	..	15	5	3	..	23	21	..	2	..	..	..
Philosophy	..	..	1	..	5	6	6	..	..	..	..	1
Philosophy (English or Hist. Option)	..	6	8	3	2	19	14	2	3	1	..	2
Psychology	..	2	..	..	..	2	2	..	..	..	..	..
Mathematics and Physics	..	24	14	3	3	44	24	4	16	..	2	2
Physics and Chemistry	..	3	3	..	..	6	5	..	1	..	..	..
Physics	..	1	2	2	..	5	..	1	4	..	..	..
Biology	..	1	1	3	..	5	4	..	1	..	..	..
Physiology and Biochemistry	..	3	2	2	..	7	4	1	2	..	..	..
Biological and Medical Sciences	..	19	13	5	4	41	28	6	7	..	..	1
Chemistry	..	10	6	2	3	21	14	1	6	..	..	1
Chemistry, Mineralogy and Geology	..	1	1	1	..	3	2	..	1	..	..	..
Geology and Mineralogy	..	2	2	..	..	4	..	2	2	..	1	2
Science (General)	..	1	1	..	..	2	2	..	..	..	..	..
Household Economics	..	17	20	5	..	42	28	9	5	..	2	4
Commerce and Finance	..	16	20	6	1	43	26	8	9	1	2	2
Occasional Students	3	..	1	..	..	4	4	..	..	..	..	..
Totals	3	338	279	122	89	831	613	108	110	14	8	33

Third Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Honours Deferred	Debarred
Pass	..	132	107	36	40	315	270	37	8	7	..	..
Supplementals	..	10	4	2	1	17	14	3	..	..	..	..
General	..	6	5	2	..	13	13	..	..	1	..	..
Classics	..	6	5	4	..	15	15	..	..	..	..	..
Greek and Hebrew	..	2	..	..	..	2	2	..	..	..	..	..
Latin (French or Greek Option) Div. I.	..	3	..	..	2	5	5	..	..	..	..	1
Latin (French or Greek Option) Div. II.	..	..	3	..	..	3	3	..	..	..	..	..
Modern Languages	..	16	18	6	3	43	42	1	..	1	..	..
English and History	..	17	13	2	3	35	32	..	3	1	..	..
Modern History	..	2	3	3	..	8	7	..	1	..	..	..
Political Science and Economics	..	14	12	8	..	34	32	1	1	2	..	..
Sociology	..	4	4	..	..	8	8	..	..	1	..	..
Law	..	7	3	6	..	16	16	..	..	..	..	..
Philosophy	..	4	2	..	4	10	10	..	..	..	..	1
Philosophy(English or History Option)	..	2	5	1	..	8	6	2	..	..	..	..
Psychology	..	5	1	..	..	6	4	..	2	..	..	..
Mathematics and Physics, Div. I	..	7	4	..	..	11	7	..	4	..	..	..
Mathematics and Phyiics, Div. II	..	9	1	..	2	12	10	1	1	1	..	..
Mathematics and Physics, Div. III	..	1	..	..	..	1	1	..	..	..	..	..
Mathematics and Physics, Div. IV and V	..	1	1	1	1	4	4	..	..	..	..	..
Physics and Chemistry	..	2	1	..	..	3	2	1	..	..	..	..
Biology	..	5	5	..	..	10	9	1	..	1	..	..
Physiology and Biochemistry	..	2	..	1	..	3	3	..	..	..	..	..
Biological and Medical Sciences	..	18	11	3	2	34	23	3	8	..	..	2
Chemistry	..	6	3	..	..	9	6	2	1	..	..	..
Chemistry, Mineralogy and Geology, Div. I	..	1	..	..	..	1	..	1	..	..	..	..
Chemistry, Mineralogy and Geology, Div. II	..	1	1	..	..	2	..	2	..	..	..	..
Geology and Mineralogy	..	..	1	..	..	1	..	1	..	..	..	..
Science (General)	..	..	2	..	..	2	1	1	..	..	..	..
Household Economics	..	24	19	4	1	48	40	4	4	2	1	1
Commerce and Finance	..	24	17	6	2	49	41	3	5	1	..	1
Occasional Students	4	..	1	..	..	5	4	1	..	..	..	..
Totals	4	331	252	85	61	733	630	65	38	18	1	6

Fourth Year

Course	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Conditioned	Failed	Aegrotat	Degree without Honours
Supplementals	..	..	1	..	..	1	1	..	..	..	..
General	..	5	4	..	..	9	9	..	..	..	..
Classics	..	3	8	3	1	15	14	1	..	1	2
Latin (French or Greek Option), Div. II	..	..	5	..	..	5	5	..	..	..	..
Modern Languages	..	13	18	6	2	39	38	1	..	..	2
English and History	..	19	13	4	..	36	36	..	..	1	1
Modern History	..	1	2	1	..	4	4	..	..	..	..
Political Science and Economics	..	10	6	2	..	18	17	1	..	..	1
Law	..	6	3	3	..	12	12	..	..	..	..
Philosophy	..	1	..	..	1	2	2	..	..	..	..
Philosophy (English or History Option)	..	2	4	..	..	6	5	1	..	..	..
Psychology	..	2	3	..	..	5	5	..	..	..	..
Mathematics and Physics, Div. II	..	3	2	1	..	6	6	..	..	..	2
Mathematics and Physics, Div. III	..	..	2	..	..	2	2	..	..	..	..
Mathematics and Physics, Div. IV	..	6	3	..	..	9	9	..	..	..	..
Mathematics and Physics, Div. V	..	2	..	..	..	2	2	..	..	..	..
Physics and Chemistry	..	3	..	..	..	3	3	..	..	..	..
Physics and Geology	..	1	..	..	..	1	1	..	..	..	..
Biology	..	8	1	..	..	9	9	..	..	..	..
Physiology and Biochemistry	..	2	1	..	..	3	3	..	..	..	..
Biological and Medical Sciences	..	11	1	1	..	13	13	..	..	..	..
Chemistry	..	4	..	1	..	5	5	..	..	..	..
Chemistry, Mineralogy and Geology, Div. I	..	1	2	..	..	3	3	..	..	..	..
Chemistry, Mineralogy and Geology, Div. II	..	..	2	..	..	2	2	..	..	..	..
Geology and Mineralogy	..	1	1	..	..	2	2	..	..	..	..
Food Chemistry	..	1	1	..	..	2	2	..	..	..	..
Household Economics	..	15	16	3	..	34	34	..	..	1	..
Commerce and Finance	..	29	18	5	..	52	52	..	..	1	..
Occasional Students	5	..	..	..	..	5	5	..	..	..	..
Totals	5	149	117	30	4	305	301	4	..	4	8

Teachers' Course

	Passed	Conditioned	Total
May Examination	234	60	294
September Examination	239	100	339
	473	160	633
Duplicates			137
Totals			496

Faculty of Medicine

	Passed	Conditioned	Failed
First Year	90	20	20
Second Year	90	17	23
Third Year	86	25	11
Fourth Year	103	19	3
Fifth Year	116	12	3
Sixth Year	106	5	..
B.Sc. (Med.)	3	1	..
Diploma in Public Health	11	..	..
Diploma in Radiology	1	..	..
Totals	606	99	60

Faculty of Applied Science and Engineering

	Passed with Honours	Passed	Conditioned	Failed
First Year—				
Civil Engineering	1	1	5	..
Mining Engineering	6	9	16	11
Mechanical Engineering	6	8	5	7
Architecture	1	4	3	..
Engineering Physics	2	1	4	5
Chemical Engineering	12	20	25	23
Electrical Engineering	3	8	1	12
Metallurgical Engineering	2	7	4	1
Second Year—				
Civil Engineering	2	4	4	1
Mining Engineering	4	7	6	4
Mechanical Engineering	2	10	11	16
Architecture	1	2	5	1
Chemical Engineering	11	13	25	14
Electrical Engineering	2	8	13	12
Metallurgical Engineering	3	..	..	..
Third Year—				
Civil Engineering	4	8	8	1
Mining Engineering	3	8	6	5
Mechanical Engineering	7	20	11	3
Architecture	1	6	4	..
Chemical Engineering	9	12	21	4
Electrical Engineering	6	11	12	6
Metallurgical Engineering	6	5	1	..
Fourth Year—				
Civil Engineering	9	19	3	..
Mining Engineering	3	4	2	..
Mechanical Engineering	12	21	7	1
Architecture	3	4	..	..
Chemical Engineering	13	26	3	..
Electrical Engineering	13	21	5	3
Metallurgical Engineering	..	2	2	1
Fifth Year—				
Architecture	2	6	..	..
Totals	149	275	212	131

Faculty of Household Science

	Passed	Conditioned	Failed
First Year	8	2	1
Second Year	6	..	2
Third Year	13	3	2
Fourth Year	1	1	..
Occasional student	1	..	..
Supplementals	1	1	..
Totals	30	7	5

Ontario College of Education

	Passed	Failed
*High School Assistants' Course	463	..
Specialists' Courses	149	..
First Class Public School Course	139	..
Elementary Art Course	41	..
Specialists' Art Course	11	..
Elementary Commercial Course (passed in part)	96	..
Elementary Music Course	23	..
Elementary Physical Education Course	111	..
Specialists' Physical Education Course	37	..
Intermediate Household Science Course	10	..
Librarians' Course	41	..
Bachelor of Pedagogy Course	39	..
Bachelor of Pedagogy Course (passed in part)	76	..
Number who failed in whole or part	..	177
Totals	1,236	177

*Many of these are included among those who passed or failed in the other courses in this list.

Faculty of Forestry

	Passed	Conditioned	Deferred	Failed
First Year	3	1	2	1
Second Year	7	1	..	2
Third Year	9	4	..	..
Fourth Year	20	1	1	..
Totals	39	7	3	3

Faculty of Music

	Passed	Conditioned	Failed
First Year	5	1	4
Second Year	3	1	3
Third Year	4	4	1
Totals	12	6	8

Faculty of Dentistry

	Passed	Conditioned	Failed
First Year	20	8	3
Second Year	19	5	1
Third Year	32	9	..
Fourth Year	29	13	..
Fifth Year	41	3	..
B.Sc. (Dent.) Candidates	1	..	..
Dental Nurses	20	2	..
Totals	162	40	4

Departments

The numbers examined in the different departments of the University, including those persons granted standing for military service, were as follows:

Arts:		
Fourth Year	305	
Third Year	733	
Second Year	831	
First Year	997	
Teachers' Course	496	
Graduates (Specialist Standing)	75	
		3,437
Medicine:		
Sixth Year	111	
Fifth Year	131	
Fourth Year	125	
Third Year	122	
Second Year	130	
First Year	130	
B.Sc. (Med.)	4	
Diploma in Public Health	11	
Diploma in Radiology	1	
		765
Applied Science and Engineering:		
Fifth Year	8	
Fourth Year	177	
Third Year	188	
Second Year	181	
First Year	213	
		767
Household Science		42
Education		874
Forestry		52
Music		26
Graduate Studies		430
Dentistry		206
Social Science		66
School of Nursing		72
Law		8
Pharmacy		205
Agriculture		120
Veterinary Science		40
Local Examinations in Music		13,660

(*i*) Admission to Degrees:

	Men	Women	Total
LL.D. (Honorary)	3	1	4
D.Sc. (Honorary)	3	...	3
Ph.D	24	4	28
M.A	61	39	100
M.S	2	...	2
M.A.Sc	7	...	7
E.E	1	...	1
D.Paed	3	...	3
M.S.A	3	...	3
M.V.Sc	1	...	1
D.V.Sc	2	...	2
B.A	272	320	592
B.Com	50	2	52
M.D	109	11	120
B.Sc. (Med.)	3	...	3
B.A.Sc	191	1	192
B.Arch	6	1	7
B.H.Sc	...	18	18
B.Paed	34	5	39
B.Sc.F	22	...	22
Mus. Bac	4	...	4
D.D.S	43	1	44
B.Sc. (Dent.)	1	...	1
LL.B	4	...	4
B.S.A	116	4	120
B.V.Sc	41	...	41
Phm.B	69	5	74
Totals	1,075	412	1,487

(*j*) Geographical Distribution of Students:

FACULTY OF ARTS

	University of Toronto	University College	Victoria College	Trinity College	St. Michael's College	Duplicates	Totals
Ontario: (1) Province	332	460	418	169	87	7	1,459
(2) Toronto	431	749	537	192	143	10	2,042
Nova Scotia	3	2	..	..	..	..	5
New Brunswick	2	1	..	1	1	..	5
Prince Edward Island	..	2	..	..	..	..	2
Quebec	10	2	4	1	2	..	19
Manitoba	7	3	2	5	..	..	17
Saskatchewan	8	13	5	1	4	1	30
Alberta	5	16	3	..	2	..	26
British Columbia	2	7	1	3	..	..	13
United States	6	11	3	5	50	2	73
Elsewhere	1	14	14	3	..	..	32
Totals	807	1,280	987	380	289	20	3,723

THE UNIVERSITY

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Science	School of Nursing	Occupational Therapy	Physiotherapy	Registered Twice	TOTALS
Ontario:															
(1) Province	1,459	303	332	22	596	29	16	196	90	33	181	3	5	19	3,246
(2) Toronto	2,042	445	427	19	311	14	13	269	81	46	86	14	8	37	3,738
Nova Scotia	5	4	..	..	8	..	..	17	1	8	3	..	..	1	45
New Brunswick	5	6	1	..	7	..	..	15	2	1	3	..	..	..	40
Prince Edward Island	2	..	..	..	1	..	..	3	..	2	..	..	..	..	8
Quebec	19	3	1	..	5	1	1	7	2	3	6	..	..	1	47
Manitoba	17	6	5	..	12	..	..	18	10	5	2	..	..	1	74
Saskatchewan	30	22	9	..	25	2	1	17	10	5	10	2	..	..	133
Alberta	26	8	8	..	2	1	1	8	2	3	4	..	..	1	62
British Columbia	13	19	4	2	11	1	1	16	2	4	6	1	..	2	78
United States	73	17	2	2	4	..	2	25	4	..	1	..	..	..	130
Elsewhere	32	9	7	..	2	4	..	23	8	3	22	..	..	..	110
Totals	3,723	842	796	45	984	52	35	614	212	113	324	20	13	62	7,711

THE PROVINCE OF ONTARIO

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Science	School of Nursing	Occupational Therapy	Physiotherapy	Registered Twice	TOTALS
Algoma	34	8	3	2	3	..	..	1	1	2	1	..	..	..	55
Brant	43	8	5	..	12	1	..	2	1	..	8	1	..	..	81
Bruce	30	4	5	..	17	..	..	4	8	..	4	..	..	1	71
Carleton	57	9	12	1	35	1	2	11	8	1	6	..	..	..	143
Cochrane	10	..	2	..	3	..	..	..	5	..	..	..	..	..	20
Dufferin	15	1	2	..	5	..	2	4	1	..	3	..	1	..	34
Dundas	8	..	1	..	9	..	..	1	1	1	..	..	..	..	21
Durham	31	5	2	..	9	1	1	2	1	..	..	1	..	..	53
Elgin	11	..	2	2	11	..	..	2	1	..	..	..	..	1	28
Essex	57	12	12	..	29	..	..	3	..	3	8	..	..	..	124
Frontenac	4	1	..	1	22	..	..	3	..	..	1	..	..	..	32
Glengarry	2	..	..	..	..	..	..	1	..	..	1	..	..	..	4
Grenville	7	5	..	..	1	..	..	1	..	..	..	..	..	..	14
Grey	47	9	6	..	11	2	..	1	2	..	4	..	..	..	82
Haldimand	14	1	5	..	4	1	..	4	..	..	1	..	..	..	30
Haliburton	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Halton	35	5	8	..	9	1	1	3	..	..	..	..	..	..	62
Hastings	24	2	5	..	13	2	1	3	2	..	2	..	..	1	53
Huron	30	2	6	3	16	1	1	4	1	..	4	..	..	..	68
Kenora	10	..	4	..	3	..	..	..	1	..	1	..	..	..	19
Kent	18	6	10	..	7	1	1	4	3	2	3	..	..	..	55
Lambton	32	7	6	3	8	1	1	2	2	1	1	..	1	..	65
Lanark	12	2	3	..	15	1	..	3	..	1	1	..	1	..	39
Leeds	10	2	..	..	13	..	..	2	..	1	3	..	..	..	31
Lennox & Addington	4	..	..	..	4	..	..	..	..	..	..	..	..	..	8
Lincoln	41	7	10	..	12	..	..	4	1	..	4	..	..	1	78
Manitoulin	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Middlesex	15	1	3	1	38	..	..	9	2	1	7	..	..	..	77
Muskoka	6	3	2	..	5	1	..	2	2	..	3	..	..	1	23
Nipissing	17	12	4	1	6	..	..	2	..	..	3	..	..	..	45
Norfolk	13	5	4	..	3	..	..	4	5	..	1	..	..	..	35
Northumberland	26	3	..	..	7	..	..	1	..	..	7	..	..	..	44
Ontario	49	8	6	..	22	1	..	7	4	..	9	..	..	..	106
Oxford	24	9	7	..	12	..	..	4	1	1	1	..	..	2	57
Parry Sound	13	1	2	..	3	..	..	..	..	..	1	..	..	..	20
Peel	58	2	22	..	7	1	..	7	1	3	2	..	..	..	103
Perth	44	11	11	..	20	1	1	5	1	1	4	..	..	1	98
Peterborough	27	6	4	1	9	..	1	2	3	1	5	..	..	..	59
Prescott	3	..	..	..	1	..	..	..	..	..	..	..	..	..	4
Prince Edward	7	1	1	..	2	..	..	1	..	..	..	..	..	..	12
Rainy River	2	6	..	..	..	..	..	..	..	..	..	..	..	..	8
Renfrew	15	1	..	..	6	..	..	1	..	..	2	..	..	..	25
Russell	2	..	..	..	2	..	..	..	..	..	..	..	..	..	4
Simcoe	82	21	17	1	16	..	..	5	2	3	5	..	..	1	151
Stormont	5	2	1	..	6	..	..	..	..	..	..	..	..	..	14
Sudbury	9	..	5	..	..	..	..	..	2	..	..	..	..	..	16
Thunder Bay	21	3	15	..	10	2	..	5	4	..	1	..	..	..	61
Timiskaming	33	10	7	..	5	2	..	2	1	..	8	..	..	1	67
Victoria	23	6	2	..	6	1	..	4	1	..	1	..	..	1	43
Waterloo	48	14	19	..	20	2	2	9	3	4	13	..	..	4	130
Welland	46	12	13	1	10	..	..	8	..	..	5	..	..	..	95
Wellington	59	9	16	2	20	2	..	13	2	..	7	..	..	..	130
Wentworth	69	37	27	2	55	3	..	26	13	5	23	..	..	2	258
York	157	24	34	1	34	..	2	14	4	2	16	1	2	2	289
Toronto	2,042	445	427	19	311	14	13	269	81	46	86	14	8	37	3,738
Totals	3,501	748	759	41	907	43	29	465	171	79	267	17	13	56	6,984